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Illinois State University
Normal, Illinois

A Curriculum Guide for the Schools of
Missouri - Grades 10 - 11 - 12

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For the Schools of Missouri

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● A Curriculum Guide
For Grades Ten,
Eleven, and Twelve

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DR. ROBERT J. GREEF, Director of English, and Chairman, Division of Language and Literature, Central Missouri State College, Warrensburg

IRVIN KELLER, Executive Secretary, Missouri High School Activities Association, Columbia

Developing the Curriculum Guide

DR. GLENN LESLIE, Formerly Professor of Education, Northeast Missouri State Teachers College, Kirksville

DR. ROY F. LITTLE, Assistant Superintendent of Schools, Springfield

SARAH MANLEY, Teacher, Festus High School, Festus

DR. ORVIN L. PLUCKER, Formerly Superintendent of Schools, Independence

DR. CHARLES H. PHILPOTT, Formerly Director of Education, Curriculum, Research and Development, St. Louis Public Schools, St. Louis, (retired)

DR. JAMES H. SEENEY, Professor of Education, Lincoln University, Jefferson City

DOROTHY C. SHATTO, Teacher, North Kansas City High School, North Kansas City

FRANCES STORY, Teacher, St. Charles High School, St. Charles

CLAUDINE TRIPLETT, Instructor in Music Education, Northeast Missouri State Teachers College, Kirksville

DR. RALPH K. WATKINS, Professor of Education, University of Missouri, Columbia

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GENEVA WILLIAMS, Art Instructor, Beaumont High School, St. Louis

MAUDMARY WILSON, Art Instructor, Neosho High School, Neosho

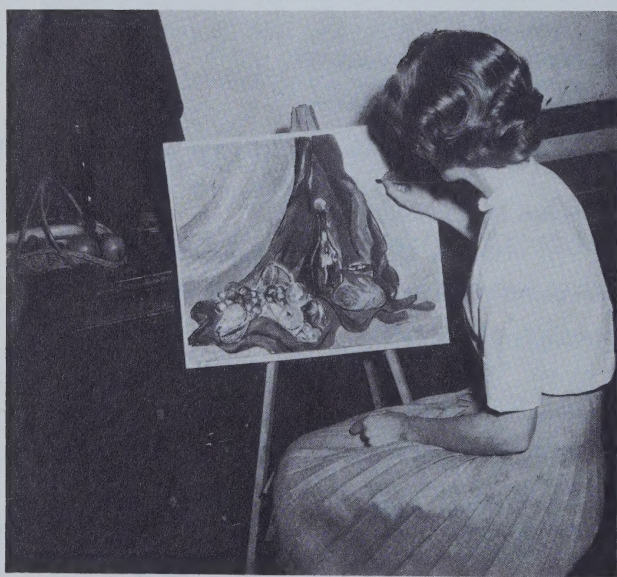
VERNA WULFEKAMMER, Associate Professor of Art, University of Missouri, Columbia

CONTRIBUTORS

RICHARD S. DABNEY, Director of Special Education, State Department of Education, Jefferson City

COVER DESIGN

MARGO WEDER, Student, Washington University, St. Louis



Foreword

As we observe art so completely interwoven in all aspects of life, we become increasingly aware of the need to give our high school students guidance in meaningful art experiences. The attitudes and skills acquired by students help them understand and appreciate the place art assumes in the complex life of which they are a part. The scientist, the engineer, the businessman, the housewife, the men and women in all walks of life consider art a significant phase in all of life's activities. Art should, therefore, be an integral part of the curriculum not only for the gifted, who may become creative artists, but for those who may use their art experience as intelligent consumers.

This guide has been designed to aid administrators to understand more completely the need and function of secondary art programs and give direction to teachers for developing carefully planned art activities that will have meaning and will be rewarding to the high school student.

As an aid in evaluation, this guide contains criteria for evaluating the total art program encompassing grades ten, eleven, and twelve, the physical facilities, and administrative and instructional personnel.

A great deal of time was devoted to study and research by the Production Committee during the development process of this guide. My sincere appreciation is extended to each of them for their dedicated efforts and to their administrators who made it possible for them to serve in this capacity.

Hubert Wheeler
COMMISSIONER OF EDUCATION

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Stimulation and encouragement of desirable individual and group action constitute the best insurance for the preservation and improvement of the democratic way of living. As far as formal education is concerned, these actions are best promoted by school experiences which contribute most effectively to the student's ability to work constructively with others, to his sensitivity to the needs and rights of others, to his ability to analyze situations critically, to his physical vigor, to his mental and to his appreciation of cultural, artistic, and moral values. Learning experiences become satisfying in the degree that they relate to the problems, needs, and interests of individuals and groups.

The identification of individual welfare with society's welfare constitutes a major problem of social maturation. If public education is to be evaluated by the extent to which individual behavior meets the requirements for proper performance in a democratic society, then a knowledge of the nature of the learner and an understanding of the moral, social, scientific, economic, and governmental aspects of our culture constitute the proper basis for building a curriculum for American youth.

What Generally Constitutes Secondary Education?

It is assumed that in most cases:

1. Secondary education is a series of learning experiences for youth in grades seven through twelve, and in some cases fourteen.
2. Secondary education takes place generally between the ages of twelve and eighteen, and in some cases twenty, a period during which normal physical maturity is achieved and the individual's ability to learn is at its height.
3. Secondary education covers that period in the life of the individual in which specific developmental tasks to promote growth and maturation may be utilized to fit him for participation in the activities of his fellow citizens, now and in the years to come.
4. Secondary education provides a series of experiences during which the individual's aptitudes are identified and for which both group and individual needs are provided.
5. Secondary education receives its impetus from the democratic culture, periodically examines its procedures, as well as its products, and modifies its direction according to the changing need of youth and society.

What Are the General Objectives of Secondary Education?

The secondary curriculum should provide the experience through which youth may become adjusted to the role they should be able to assume in the preservation and improvement of our way of life. In the light of this assumption, then, the general objectives of the secondary school should be:

1. to promote mental, physical, and emotional health so that the individual may live happily;
2. to inculcate to a high degree the knowledge and skills which contribute to proper understanding of, and appreciation for, living in a democratic society;

3. to develop individuals of good will with vocational competence and with initiative and determination which will enable them to recognize their opportunities and to fulfill their responsibilities in a free society;
4. to inspire youth to intellectual attainment, artistic appreciation, and creative endeavor;
5. to develop a strong sense of personal integrity based upon understanding correct moral concepts.

What Are Some of the Basic Considerations for Curriculum Developed at the Secondary Level?

Our concept of the culture and of the society for which we educate determines the nature and the content of the education to be provided. The premises upon which American culture patterns are based determine the direction that education shall go. Devotion to freedom, individual responsibility, and the democratic concept of government places a continuous obligation upon the classrooms of the nation, while on the other hand the import of sociological and technological changes in our culture makes necessary an emphasis on ability to make frequent adjustments to new developments and sometimes to conditions which temporarily may be difficult. Education cannot be static if it is to serve an everchanging society.

The school is essentially a supplementary agency which receives its force and direction from the culture of which it is a part. It supplements the home, the church, the community, and other forces in its attempt to develop proper skills, attitudes, appreciations, and understandings on the part of youth. Constant or frequent adaptation of the educational program is required as these institutions and the social and economic patterns change and thereby thrust new obligations upon the school. Thus, in an atmosphere of complicated and sometimes conflicting concepts the secondary school nurtures the young citizen into an understanding of the culture and an appreciation of its purposes and achievements as well as its problems. Education not only grows out of our cultures but paves the way for the culture of succeeding generations.

In order for the school to perform its proper function as an agency to maintain, recreate, and improve the culture, it is necessary for educators at all levels to understand the meaning of culture. Sociologically, culture is considered as all that man has learned. For purposes of curriculum building, three aspects of the culture must be considered: (1) democratic values and concepts which should be understood and appreciated by all; (2) special abilities, relating to the different kinds of work and the recognition of diverse talents among individuals; and (3) anticipation of change, a recognition of the effects of new knowledge in sociological and scientific fields.

Within the democratic values and concepts are found those elements of the culture which are common to all individuals. These values are the rightful heritage of all even though they may be unattained by many, misunderstood by some, and violated by a few. Herein, among others, are found the Bill of Rights, our Constitution, our mores, our tolerances, our ideals of the sanctity of the home, application of the scientific method of problem solving, the right to search for truth, the pursuit of happiness, government by majority, and the ideal of the common good. In these and other aspects of our heritage lies the common goal which makes us strive to perpetuate and ever make better the democratic way of life.

Special abilities are important in our culture because they result in the division of society into professions and other productive work groups of all kinds. Once established, they tend to structure society into occupational segments, between which there is need for communi-

cation relative to common values and mutual dependency. Therefore, the school has the task of developing ethical, esthetic, social economic, and moral concepts which will constitute a common focus for human endeavor, designed both for the individual's benefit and for the general welfare.

Change appears to be certain in our culture. Free enterprise and the exercise of free will enable individuals to make wholesome adjustments. Many phases of social evolution are eminently desirable, but sometimes it is difficult for individuals to reorient themselves properly. Invention often is the forerunner of temporary displacement and uncertainty for various groups. Technological changes affect all institutions in varying degrees—homes, industry, government, labor, management, and recreation, to name a few.

Technological advances require the fortification of citizens with valid backgrounds of scientific knowledge, economic theory, and sociological understanding to insure adaptability to change without loss of perspective. The ability to think critically and versatility in modes of operation are essential in a changing society and create a tremendous obligation for the secondary school.

The challenge to those in charge of secondary school programs, and to teachers in general, is viewed realistically as the task of developing individuals in and for an evolving society. The school should consider each pupil as a social being having personal needs common to other pupils of like maturation as well as peculiar talents and abilities to be nurtured. The heritage of freedom should be inculcated in youth as thoroughly as academic and activity participation will provide, and the needs of youth and of society should serve as a compass to educational processes.

The concern of the people when rapid cultural changes occur and the disquieting impact of divergent social, economic, and governmental theories are observable in a critical analysis of our education program, which is still gathering momentum. The current trend is toward a patriotic allegiance to all aspects of individual freedom guaranteed to our population through our democratic heritage. It is likewise apparent that an understanding of the people, the geography, and the economy of other lands is important to the insurance of our own well-being and for a satisfactory resolution of whatever differences we may have with philosophies of other peoples.

The implications for secondary education are relatively clear as to points which need emphasis, as follows:

- history of America and our tradition of freedom;
- identity of the individual pupil with family, friends, school, community, and nation;
- knowledge of mathematics, science, mechanics, technology, social processes, and the art of communication;
- health, self-reliance, rational behavior, and the development of mental and physical poise;
- development of an appreciation of moral values;
- understanding foreign people and cultures.

The elements listed above have implications for all citizens—in their vocations, and in their services to their country and their fellow men.

It is assumed that social-civic understandings may be a product of intelligence and experience and may be taught directly through activity approaches as well as through less, direct or vicarious processes. Psychological maturity has its physical counterpart and the following developments or achievements are related to both:

FOUNDATION FOR SECONDARY EDUCATION

understanding one's physical makeup and his social responsibilities;
developing wholesome relationships with others;
having respect for parents and other members of a family;
achieving eventually a reasonable degree of economic security;
preparing for suitable and beneficial work;
developing knowledge and skills necessary for civic competence;
desiring and achieving fully acceptable and responsible behavior;
preparing for marriage and family life;
developing a sense of values harmonious with social, moral, and civic responsibilities.

The secondary school is seen as having a direct obligation to assist youth in a better understanding of their physical, mental, and emotional growth.

What Patterns of Organization Should Be Considered?

It is assumed that each school should be able to determine the type of organization best suited to its particular situation. If each school is looking to the needs of youth, this motive will give direction not only to the program but also to its administrative and supervisory structure. There may be good reasons for a 6-6 plan as the mode of organization. However, the local situation may dictate an 8-4, 6-3, 3-3, or other arrangement. The framework should be flexible to the extent that adjustments may be made here and there in order to make the most effective use of facilities and personnel. The structuring of the school program, above and beyond minimum legal requirements should, and usually will, reflect the community's interest in the welfare of its youth.

How Can the Transition from the Elementary School to the Secondary School be Made Smoothly and Effectively?

The transition can be made smoothly and effectively if it is assumed:

1. that secondary education raises its structure on the same foundations upon which the elementary program is based: an understanding of the nature of the learner, a knowledge of the nature of the learning process, and recognition of the nature of the society in which the school operates and in which the youth lives;
2. that the development of a person within the culture is continuous throughout his lifetime;
3. that the maturation, basic needs, and individual differences of youth should influence the differentiation of activities, assignments, curricular content, and organization in accordance with the abilities and interest of each learner;
4. that if learning is motivated around pupil purposing in the elementary school, it should remain so in the secondary school;
5. that if the learner has imperative needs at one school level, he has them also at another, such as a need for belonging, a need for successful achievement, a need for respect and affection, a need for acquiring knowledge and skills, and a need for a feeling of security.

Study and Production

The State-Wide Secondary Curriculum Committee was appointed in 1953 by the Commissioner of Education to make a study of the secondary curriculum in view of developing guides in the various subject-matter areas. The roster of the committee reveals that all phases of secondary education were represented and that members from the State-Wide Elementary committee were also placed on this committee.

BASIC ASSUMPTIONS

The following basic assumptions were developed for the purpose of guiding the thinking and planning at all stages in the study and development of the guides.

It was assumed:

1. That learning experiences for youth in grades seven through twelve should be based on the needs and interests of adolescents, insofar as practical and possible.
2. That the guides should be so organized as to bring about a closer articulation between elementary and secondary education, and to make the transition from elementary smoothly and effectively.
3. That since the development of a person within a culture is continuous, the curriculum of the secondary school should build its structure on the same foundations upon which the elementary program is based.
4. That the nature of our present-day society requires that planners of the curriculum not only continue to give attention to the teaching of the basic fundamental skills, but that suggestions be made in the guides for the presentation of these skills in a meaningful and functional manner.
5. That curricular development should involve research and study of existing programs and practices in the state, as well as in other states, in view of recommending changes in grade placement and scope of content. In addition to this type of research, significant studies should be used as references in the planning and writing of the guides.
6. That curricular development requires cooperative work and planning of study and production committees, composed of teachers, principals, supervisors, superintendents, parents, and teacher educators, as well as widespread participation by all faculties in the state during the implementation and evaluation phases of the program.
7. That curricular development at the state level should be progressive in direction to the extent that research, study and production procedures, grade placement of content, scope of content, and other suggestions offered in the guides will stimulate and serve as directives for curricular improvements at the local level.

STUDY AND PRODUCTION

PROCEDURES

In keeping with the basic assumptions, the State-Wide Committee proceeded as follows:

1. Assisted in the selection of study-production committee members in the following areas:

- Language Arts
- Mathematics
- Social Studies
- Science
- Home Living
- Industrial Arts
- Physical Education
- Business Education
- Art
- Music
- Core Curriculum
- Vocational Education
- Distributive Education

The membership of these committees represented all phases of public education, including teachers of grades seven through twelve in each area.

2. Advised that these committees make a study of areas assigned and develop guides at the junior high school level of secondary education, grades seven, eight, and nine, and senior high school level, grades ten through twelve.
3. Developed two tentative statements entitled, "Foundations for Secondary Education" and "Foundations for the Junior High Level of Secondary Education." These statements were developed for the purpose of (1) bringing about some continuity of thought, and (2) causing a closer articulation between the elementary and secondary programs. These foundation statements were studied and revised by the study-production committees and finally became the basic viewpoint upon which all guides were developed.
4. Suggested a plan of organization for developing the area guides for the purpose of bringing about some degree of uniformity in all guides.
5. Reviewed and approved from time to time the work of all committees during the study-production phase.
6. Recommended to the Commissioner that all guides be published first in tentative form for teachers' evaluation, and further recommended plans for the implementation and evaluation phases of the program.

Art for the Schools of Missouri

In 1953 Commissioner Hubert Wheeler announced plans for a curriculum program that included the revising of all existing state curriculum guides, as well as the developing of new guides in several secondary areas. Prior to this time an elementary art curriculum guide had been prepared for kindergarten through grade eight, and an art guide for the secondary level, grades nine, ten, eleven, and twelve. A new art curriculum guide was developed and published in 1956 for kindergarten through grade six, and an art curriculum guide for grades seven, eight, and nine was published in 1960.

In order that the art curriculum program might be completed, plans were announced in 1960 to develop an art guide for grades ten, eleven, and twelve. A committee of art educators representing schools of various enrollments throughout the state was appointed.

In developing this guide, investigations of research in art education by other art educators, studies in current literature dealing with many phases of secondary art education, and an evaluation of trends in curriculum development were considered by the Production Committee. The Committee was of the opinion that basic assumptions underline the total art curriculum, and these assumptions served as basic essentials during the work of production. These assumptions are:

Art is a natural activity of man. It is important, therefore, that the senior high school curriculum should provide opportunity for each student to express and develop his inherent creative abilities.

In as much as the development of creative individuals is essential to the survival of a free and democratic society, the art program should stress originality and independent thinking.

A curriculum guide for the senior high school should contain many varied instructional aids to provide the basis for a comprehensive art education.

The study of the folk arts and fine arts throughout history enlarges the students' understanding of human endeavor, and helps the students realize their own relationships to contemporary society.

ART FOR THE SENIOR HIGH SCHOOLS OF MISSOURI, A Curriculum Guide for Grades Ten, Eleven, and Twelve, has been devised to assist teachers, administrators, and parents in designing an art program for students of high school age. Each part of the guide contains information that is necessary in planning art experiences which consider the needs and interests of adolescent young adults. The underlying criteria for composing the content of the guide was that it should be as universal as possible; it should not become quickly outdated; nor should it attempt to dictate a lock-step, or limiting method of approach, yet it should be specific enough to be useful to the people it was designed to aid.

The suggested materials, experimental activities, and techniques are presented as a guide only. The teacher when planning instructional units with the students need not feel that all medias and activities suggested must be experienced by each student. The teacher should plan activities that meet the needs, interests, and abilities of his students in his particular school situation. Although certain experiences need not be prescribed for a specific maturity level when making up the year's program, provision should be made for continuing basic learnings in art knowledges, attitudes, skills, and procedures. Skills and techniques are tools of expression. They should be developed in conjunction with the art experience and the varying ability levels of students in order that each student may solve his own art problems successfully.

Senior High School students are interested in the intrinsic aesthetic qualities of art forms and are able to delve quite deeply into this aspect of appreciation. The cultural and historical influences of art should be woven into the program in order to foster the sensitivity necessary for tasteful living and artistic expression.

The art guide is essentially divided into four basic parts. The first may be termed a foundations section, as it is primarily devoted to the organizational plan of the art program. Herein may be found such items as

A POINT OF VIEW—a frame of reference, or philosophical background upon which the art program should be based

ROLES OF ADMINISTRATORS, TEACHERS, AND PARENTS—the part that each may perform in fostering and promoting a balanced and sound art education program

How to use the Art Guide

YOUTH AND ART—a review for educators of what the high school student is like physically, emotionally, and intellectually, to be used as a guide for planning an effective program which will meet their needs and interests

THE ART ROOM—presented as an aid in developing a functional art work room. It may serve as a list for upgrading present facilities or for planning new art rooms.

Preceding the second section of the guide is a treatise on design and its fundamentals. **DESIGN** has been placed ahead of the remaining divisions because of its inseparable relationship to all art expression. Immediately following design, the guide gives information on some relatively new developments in color that no doubt will considerably influence art and photography. Also included is a notation on color blindness, an important consideration for art teachers.

The second section, **TWO-DIMENSIONAL ART**, is concerned with many processes of graphic expression, from drawing and painting experiences to photography. These are listed in the guide in alphabetical order. Each experience is given in a suggested sequence with continuity and progressive difficulty considered. Experiences are begun with a concise but informative **overview** about the background and nature of the activity area. This is followed by a basic list of **desired attainments** that the teacher may use in evaluating a student's success with the activity. Next is presented a program of **suggested activities**, succeeded by a list of fundamental **materials and tools**. Whenever the experience was considered by the Curriculum Production Committee to be quite complex, or perhaps unfamiliar, a rather detailed explanation of the process was given.

Part three of the art guide is devoted to a variety of **THREE-DIMENSIONAL ART**, or Structural Expression, as divergent in scope as **Architectural Planning** and **Basketry**. The format of this section is essentially the same as the preceding Two-Dimensional Expression.

Inserted between the third and fourth sections of the guide is a discussion of Art In Motion, Space-Time Art. This relatively new concept in art, the **fourth dimension**, will whet the interest of today's young art student.

In section four the teacher will find suggestions on planning a three-year art program, a sample unit on art history, and other units of study. Supplemental material for supporting and enriching the activities suggested in the guide may be found in this division: i.e., **RECIPES**, **SOURCES OF MATERIALS**, **TOOLS AND EQUIPMENT**, **INDIGENOUS MATERIALS**, **VISUAL AIDS**, **PICTURE LIST**, **GLOSSARY**, **BULLETIN BOARD DISPLAYS**, **BIBLIOGRAPHY**, and other information useful in the functional presentation of the art program.



The Art Program

EVOLVES from the philosophy, aims, and objectives set forth in the Missouri Art Curriculum Guides for the Elementary and Junior High School

DEMANDS an educational awareness that all students have creative ability

ENRICHES learning by developing individual curiosity, creative thought, and expression

SERVES a major aim of education by developing citizens able to think independently and make wise decisions

AIDS the entire curriculum as an important promoter of creativity

INSTILLS appreciation of our art heritage and its relationship to art in everyday living

ESTABLISHES criteria for aesthetic judgment

OFFERS opportunity and incentive for developing vocational and leisure time activities

DEVELOPS talents and skills, and forms a background for advanced study

PROMOTES perception and awareness in the individual that he may be sensitive to line, color, texture, and form in his surroundings

ENCOURAGES problem solving at the student's own level for personal growth and self adjustment

PROVIDES a means for recognition and achievement, security, and social status.

ART IS THE VISUAL EXPRESSION OF MAN. Art is the application of man's ability to express himself through the use of visual signs, symbols, and structures. As a universal language, art reveals man's culture throughout time. Mankind's spiritual, emotional, and social strivings are revealed in our art heritage. Paintings sculpture, artifacts, and architecture objectify the history of man's development as he explored and discovered the possibilities of materials shaping and forming his ideas into new and more significant visual forms.

ART IS A NATURAL ACTIVITY. The need to express ,to experiment, to discover, to select, to organize, to create, and to appreciate, is inherent in every individual. Therefore, art experiences may help the high school student to realize at least in part the undiscovered creative and intellectual potential within himself. Experiences in creative thought and expression are important to the adolescent student for they develop the imagination and thought processes necessary for problem solving. The student encounters problem solving in art activities when he makes choices of materials and tools, creates a design to suit a function, experiments with and plans a method of procedure, organizes shapes and forms to express an idea and evaluates his activity and product.

ART SERVES TO ENRICH AND VITALIZE THE HIGH SCHOOL STUDENT'S LEARNING AND LIVING.

The adolescent student dreams of the future, builds ideals, and aspires to success. For him art may provide a means for achievement and recognition, the development of a sense of individuality and personal worth, a reliance on his own judgment, and a tolerance for the expressions and beliefs of others. On his way to maturity, the student becomes aware of his culture, past and present, gains a better understanding of mankind, and attains insights concerning the future. He becomes a more sensitive individual to the aesthetic values in works of art and in his environment.



ART FOSTERS A FEELING FOR ORDER AND ARRANGEMENT AND AN UNDERSTANDING OF FORM AND FUNCTION.

As the adolescent student solves design problems, he becomes more alert to the visual richness which surrounds him. He becomes a wiser consumer because he learns to recognize design as an economic and aesthetic factor in determining the value of the things with which he comes in contact. Art can and

does integrate the past and present in the classroom and in life. The student derives knowledge and enjoyment through his own action, observation, and perception. His behavior development is aided through the structure of experiences in a social group. Actual art experiences build concepts of behavior—concepts with which the individual thinks. Through self-experiences the student becomes aware of the thought and craftsmanship which are embodied in the fashioning of a product. The respect, care, appreciation for, and pride in personal and communal belongings are engendered through art activities.

ART HELPS THE INDIVIDUAL TO BE RESPONSIVE TO HUMAN VALUES. In a democratic society, the liberation of the student's potentialities for creative, intelligent, and self-disciplined living is essential. Through this liberation of creative abilities the youth learns to become a self-reliant individual, capable of making wise decisions, earning a livelihood, and contributing to community affairs. Art experiences give meaning to his life, for through art he looks at the world from within himself, as he builds upon this creative concept. Changes in his environment have come through man's ability to imagine and produce, including new developments in space-time architecture.* An art activity and study program for the adolescent is an investment in the creative energies of our youth who will be future leaders and citizens of our world.

ART PROVIDES ACTIVITY FOR LEISURE TIME.

The need for constructive leisure time activities has become more acute as automation is releasing our society from long hours of labor and shortening the work week. Art provides a release of tensions, anxieties, and emotions in a socially acceptable manner. Creative experiences which satisfy man's intuitive hunger to put things together, reveal the potentials of men—the regenerative faculties. Youth may develop a freedom of expression in a very unique and personal manner from which much satisfaction may be derived in adulthood. The experience of creating in the quest of art expressions results in making life more meaningful as it richly nourishes the spirit.



* See page 230 and see Glossary

You have responsible positions of educational leadership.

Your art staff needs your active support in the designing and implementation of a successful art program.

You serve the program as you

DEMONSTRATE your understanding of the importance of art to the education of youth by

providing the most satisfactory facilities, supplies, and teaching aids possible

encouraging the use of effective counseling in order that the gifted student may include art experiences in his schedule

organizing a curriculum which gives all students the opportunity to receive art instruction throughout their high school career

keeping class enrollments consistent with the laboratory type activities of the program

recognizing that art classes can help the student needing remedial aid but should not be considered as providing corrective measure for all disciplinary problems

acknowledging and supporting the achievements of art students and teachers

attending functions and exhibits sponsored by the art department.

Superintendent and Principal

IMPROVE educational effectiveness by

serving as an educational resource person

developing programs of in-service training

maintaining close lines of communication with the art staff to foster understanding and continuity of the instructional program

understanding that demands from many sources for posters, program covers, and other promotional materials disrupt the art program and should be discouraged

assisting art personnel in continuous evaluation of the art program and revising it when necessary

instilling feelings of professional dignity and importance in staff members

encouraging the membership and participation of teachers in local, state, and national organizations

visiting the art classes often.

PROMOTE school-community relations by

keeping the community informed about the art program and its activities

being familiar with the art resources within the community such as galleries, museums, statuary, architecture, and cultural organizations

attending functions and exhibits promoted by art institutions and cultural groups

enlisting the services of artists and craftsmen in the community for the enrichment of the art program

encouraging the financial support of the art program.

You, the art director, supervisor, coordinator, or consultant, have the office of administering the total art program and fostering its aims and philosophy.

You influence the art program as you

SURVEY the program continuously and work for its advancement

COORDINATE the activities of the art program and establish effective continuity

FORMULATE the over-all plans for the year with teachers so they may understand the scope of the program

INTERPRET the tenable art educational philosophy to the teachers, the administration, and the community

BUILD self-reliance and confidence in teachers by giving **constructive** and **practical** help

GIVE assistance to the classroom teacher **without assuming her position**

VISIT schools according to a regular but flexible schedule planned in cooperation with the administration

DEVELOP rapport and a cooperative spirit with teachers by displaying a helpful and friendly attitude

MAKE available for classroom use such visual reference materials as magazines, slides, filmstrips, books, and prints

SUPERVISE the requisition, distribution, and storage of supplies and equipment

DEVELOP teacher proficiency in carrying out an effective art program by helping them be **continuously** aware of the need for

recognizing basic art principles throughout the teaching procedure

projects too large for student lockers. Wide, pull-out, paper storage trays are excellent for storing and protecting finished, flat art work.

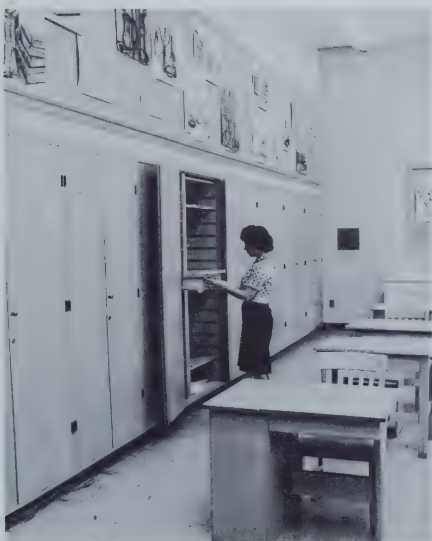
Horizontal Compartments - Wide sturdy shelves, preferably enclosed, are needed to handle large size bulk paper. Wide pull-out trays are handy for storage of small amounts of paper, making it easily available for daily use. The shelves must be sturdily constructed to handle a great amount of weight.

Cabinet shelves and drawers of every size and depth may be utilized for the storage of all other art materials. Enclosed cabinets are preferred for protection of the material, but open shelves may be used for temporary storage or for display purposes. The materials should be grouped according to type and area of use. Plan craft work benches with storage drawers and shelves to handle the specialized tools and materials of each craft. Movable or built-in wall cases are suitable for storing painting and drawing materials, magazines, clipping and reference files, three-dimensional projects, and decorative materials and props.

Vertical Compartments - Vertical storage compartments varying in height and size serve several purposes. Due to the weight and rigidity of a drawing board, it is best stored in a vertical position. Each compartment may contain several boards, but it should not be so wide that it allows any board to fall flat when others are removed.

A vertical compartment lined with peg board or attached with special holders provides storage for tools of various sizes and lengths. Cleaning implements, such as mops and brushes, may be stored in a similar cabinet.

Painting easels in large numbers must be stored when not in use. A large vertical compartment is needed for this purpose.



Compartments similar to the type used for storing drawing boards are good for drying areas or storage areas for projects on oil painting canvases, illustration board, or masonite panels. The vertical position protects the work from scratching or sticking.

Clothing sometimes presents a storage problem. Wardrobe lockers for the teacher's personal belongings and for student's wraps, aprons, or smocks are available.

A well-arranged and adequately equipped classroom is an incentive to purposeful, creative, and orderly work.



Two-dimensional expression is the product of the human spirit and imagination, giving the world an endless wonder of visual experiences to enhance our lives. Not always functional in the literal sense of the word, the graphic arts inspire and stimulate creativity in other areas of art expression affecting the daily lives of all people.

The outward expression in response to an inner desire to create, to invent, to express one's self visually gives the individual feelings of satisfaction, gratifying and fulfilling needs which are often frustrated in a world where existence has become largely a mechanical process. The graphic arts provide an opportunity for the student to discover and interpret art principles involved; and through teacher guidance, the student's inventiveness is nurtured, and he is helped to find his own solutions.

Drawing, painting, and printing provide visual interpretations for the ideas, thoughts, emotions, wit, and wisdom of mankind. Through the graphic arts we can know and enjoy the human aspects of history, the spiritual endowments of an age, the material, aesthetic, and moral values of our own time.

Two-Dimensional Expression

with a hand

Design is an expression of a visual experience and is the product of emotion and thought. Design is order -- the greatest harmony between the desired expression and the means employed, gained through the use of line, form, color, space, and texture. Art depends upon these structural elements and the principles of organization to convey meaning to the creative act. The structural elements and principles are basic and fundamental in the problem of breaking up a given space which is to enclose or surround a particular creative expression. Designing is the organizing of these elements into interesting, pleasing, and meaningful composition. *Plaque - 2nd semester wedding photo*

There are two ways of approaching design or organized space breaking:



One is **emotional**. Search, scribble, or feel-out space relationships in a free manner when an idea is not preconceived or clearly defined. The other is **intellectual**. When the idea is certain and no search is needed, the approach to space break-up is direct, calculated, and mechanical. Both approaches require the use of structural elements and principles.

Elements of Design

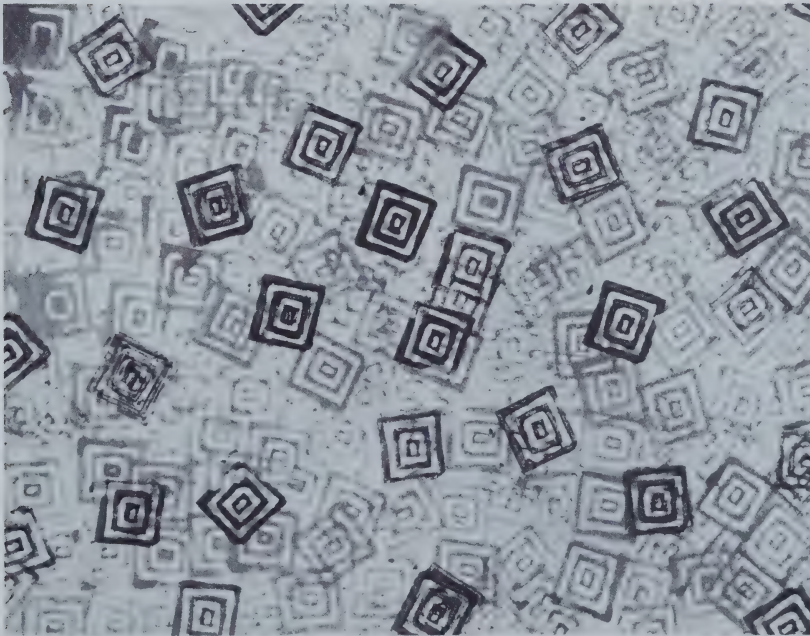
Line
Line - Man's invention to describe emotion and thought visually. It shows movement and direction, and encloses shapes or determines boundaries.

Form
Form - The emotional and intellectual qualities of the form are revealed by the variety, type, and movement of the surface area (planes) enclosing it, and by the thickness, size, and weight of mass.

Color - A quality of visual sensation which is usually evoked by light.

Texture - The surface quality of material.

Space - The area occupied by form and the area that surrounds and separates one form from another.



Rhythm

The flow of movement within an element or with reference to another element or to the whole composition is achieved by

the repetition or recurrence of an element

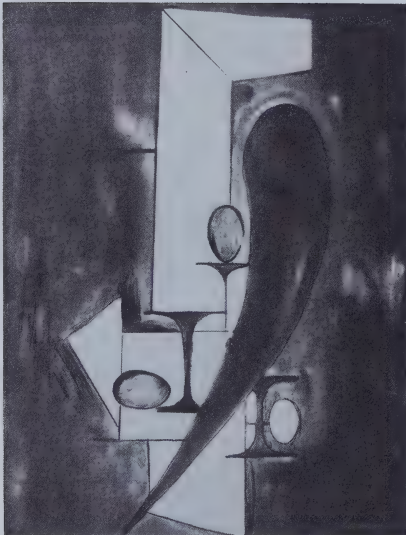
tension between parts or certain parts

similarity or resemblance of parts

filling in or completing shapes by imaginary lines

continuance, the seeing of lines beyond their limits, creating more movement

recession or advancement through greater or lesser contrast with the background.



Balance

The distribution of physical properties to suggest stability.

Symmetrical . . . very obvious (formal) with an identical division of elements.

Assymetrical . . . implied (informal) subtle variations of the elements.

Emphasis

The stressing of an element to make it more interesting or important through size, shape, position, color quality, or texture.

Principles of Design

Proportion

The comparative relationship between elements for harmony and agreement.

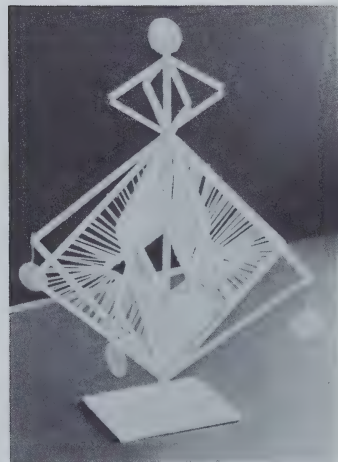


Variety

Change or contrast within one or more elements to aid interest and to avoid monotony.

Unity

The bonding together of all elements by organization and balance for total effect.



TEACHERS: The entire section on **Design** has been included for reference throughout the year's program, and/or it may be used for a required unit of study if so desired.

Line is man's invention as a means of describing emotion and thought visually and pictorially.

Line

describes mood, feeling, and direction by the quality or character of the particular type of line used

defines the shape of an object

directs the movement of an object within its own shape

directs the movement within an arrangement of objects.



Desired Attainments

Learn to use line expressively and effectively to

convey mood or idea by the quality or character of line as determined by degree of width and variety of direction

describe and identify form by enclosing space, outlining contours of shapes, and expressing surface pattern or texture

create movement by describing gesture within one object and between related objects.

Suggested Activities

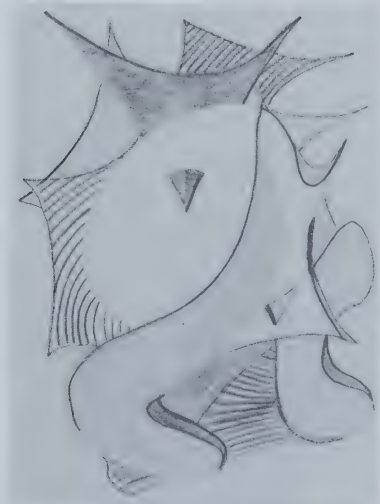
Experiment without representational content to establish mood and idea with lines of various character; such as, thin, graceful; thick, sturdy; curved, restful; curved, gay; angular, exciting.

Experiment in direct, mechanical lines in repetition.

Experiment in free flowing lines to break up space. Discover interesting shapes created by closed lines. Shade, using variety of tonal values, to emphasize shapes created by the enclosure.

Materials and Tools

paper
pencil
charcoal
ink
brushes
pens
felt pins
stick
crayon
feather



Shape is space described and enclosed by line to create a two-dimensional object. Form is the enclosure of space to create volume or mass of a three-dimensional object. The emotional and intellectual qualities of the form are revealed by the type, variety, and movement of the surface area (planes) enclosing it, and by the size, thickness, and weight of the mass. Form suggests reality existing in time and space. Its character is influenced and determined by light, color, and texture. All forms are based on four basic solids: the cube, the cone, the sphere, and the cylinder.



Desired Attainments

Use shapes and forms as tools for visual expression and learn to

analyze and simplify the complex shapes and forms of nature

reduce shapes and forms to geometric pattern for determination of basic structure

break-up space with basic geometric shapes as an aid to space and form relationship in an overall composition

vary basic shapes to give interest and identity to emotion and thought

identify form by use of light, line, color, and texture.

Shape and Form

Suggested Activities

Two-dimensional

Make designs by breaking up areas using squares, circles, or triangles. First use each shape separately and then combine the three working with them in pure geometric shapes. Try other designs by distorting the shapes, working in a free manner. Shade to add variety, mood, contrast, and depth using tones of gray from white to black. Repeat using color and texture. Break up the area in the same manner by using real objects as motifs for designs.



Create compositions with object drawing or still life painting.



Make a collage of colored paper. Cut or tear pieces of paper into a variety of geometric or free-form shapes. Make a pleasing arrangement of the shapes on a sheet of colored paper allowing the background to show if desired. When a satisfactory arrangement is achieved, glue the pieces to the background. Variety and interest may be achieved by using pencil, crayon, ink, or tempera for textural or linear effects.

Make a paper mosaic. Trace an outline drawing of realistic or abstract shapes on a piece of paper to be used as a support or background. Tear or cut small pieces of colored paper and glue them to the background. Fill each area of the drawing with the desired color. Blending may be achieved by using light to dark values of a color. Allow the background to show around the paper pieces to give the effect of grout and to serve as an outline for each shape.

Materials and Tools

paper
pencil
charcoal
water color
tempera
pastels
paste
newspaper
brushes
scissors
modeling materials
clay

Drawing and Painting

Desired Attainments

Experience with drawing and painting media and techniques of rendering should develop the ability

to understand the qualities of line and color to interpret mood, ideas, and situations

to describe and contrast form and texture

to better perceive and portray the physical structure of nature

to depict form and spatial relationship

to develop a greater freedom of self-expression

to appreciate the creative expression of others



to know the possibilities and limitations of tools and materials and to use them effectively

to study the historic periods of art and to become familiar with the achievements and contributions of artists of each period

to better understand and appreciate the act of creative expression.

Suggested Activities

DRAWING

The approach to drawing varies with the individual and with the use of materials and tools. These variations range between two methods, each equally effective as an approach to drawing.

Outline and contour drawing to which texture and shading with crisp lines and strokes may be added. Graphite pencil, crayon, and pen and ink are excellent media for this manner of rendering.

Broad strokes building up patterns of tone to describe form, texture, and shading. Lines may or may not be added to identify or accent outlines and texture. Charcoal, pastels, and crayon are flexible media suitable for this manner of rendering.

EXPERIMENTS IN OBJECT STUDY

Study and draw simple objects to observe their inherent characteristics of form, texture, and color. Learn to use line and tone for symbolic interpretation and expression in the representation of these objects.

Nature Forms

Leaves - observe variety of form and texture.

Grass - observe contrast of form, texture, and line direction in leaf and stem combinations.

Twigs and bark - observe contrast of form as in round and smooth, square and rough.

Trees - notice the contrast in form and texture and the general characteristics of the different parts of the tree.



Man-made Forms

Vases, bowls, and bottles - observe form and texture inherent in materials such as pottery, glass, and metal.

Cloth and drapery - observe texture, form, and movement.

Furniture - observe form, texture, and line direction.

DRAWING

Human Forms

Classroom poses - observe and contrast form, texture, and movement.

Quick sketch - study action and movement for freedom of drawing technique.

Extended sketch - observe for purpose of identification. Introduce background for contrast of form and texture.

Portrait - observe form and texture for purpose of identification.



Animal Forms

Classroom sketch from photographs and figurines - study form and action for purpose of identification.

Classroom sketch of live pets - observe form and action.

Classroom or museum sketch of stuffed animals - observe contrast of form and texture.

Quick sketch at farm or zoo - study action.

EXPERIMENTS WITH COMPOSITION

Combine simple forms and observe their relationship in shape, size, and texture for identification and interest. Utilize elements and principles of design.

Landscapes

Select and draw

country scenes without buildings

country scenes with farm buildings

city scenes with buildings - business area or industrial area

city scenes with buildings and landscape combined - residential areas

city and country scenes as affected by seasonal change.

Make quick sketches - thumb nail sketches to observe and portray the relation of form and texture, and the influence of light and shadow.



Object Study

Plan a composition and draw

bottles, jars, bowls, pitchers, and other objects of glass, metal, and pottery to observe the relation of form to form, and form to background, and value to value.

manufactured objects with fruit, vegetables, or foliage to observe form, value, texture, and background relationships.



Figure Study

Arrange and draw from classroom poses

figures showing relationship to background or to surroundings

figures showing imaginary background of buildings, landscapes, or fanciful interiors

figure in repose - observe relationship of the figure to its surroundings

figure in action - observe relationship of figure to its surroundings

give figures mood and character, and fit background to them.

PAINTING

The physical properties of color are especially effective in organized designs. After a few preliminary experiments with a particular medium advance to compositional arrangements for major experimentation in color.

Landscapes

Choose outdoor scenes having a variety of form, texture, and color, such as farm scenes and urban scenes combining buildings, trees, grass, ground, and sky.

To discover the power of color to describe mood, idea, and situation, paint similar scenes as affected by seasonal changes, climatic conditions - sunny day and rainy day; changes in light - dawn, dusk, or moonlight.

For further experiments with color to describe and to identify, paint scenes as affected by extreme conditions - flood, drought, fire, and storm.

Reorganize landscape elements into abstract designs emphasizing form and color to create mood or express an idea.



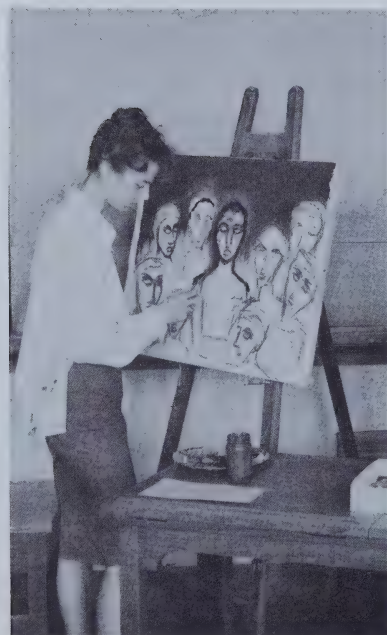
Object Study



Paint arrangements of objects of varied materials and shapes to study contrast and relationship of form, texture, and color for the purpose of identification.

Reorganize into abstract patterns arrangements of objects to demonstrate power of design and color to convey mood and idea.

Figure Study



Paint classroom poses of figures including background to show contrast of texture and to create form and spatial relationships.

Paint classroom poses of figures in various costumes and in varied background settings.

Paint classroom poses of figures using imaginary costumes and settings.

Paint abstract figure poses designing with emphasis on color, form, and texture to describe mood and idea.

Illustration

Paint pictorial compositions from personal experiences, memory situations, school activities, and local history - past and present.

Paint pictorial compositions describing idea, mood, or situation of particular passages from poems, short stories, and novels.

Paint in color and form a pictorial composition interpreting an abstract idea or thought.



Murals

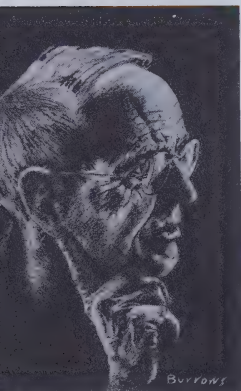
General school activities

Departmental activities

Departmental subject matter for study

History of town or state





Pencil

Graphite—

Graphite pencil is a versatile medium suitable to many types of surfaces. It works equally well on a smooth bond paper and manila or white pulp drawing paper. Use a variety of pencils in degrees of hardness for best effects. One degree of hardness will not solve every problem, however, a medium soft No. 3B or 4B drawing pencil or a No. 1 standard writing pencil will serve as a good all round sketching tool. Do not use a soft leaded pencil when desiring a concise rendering nor a hard pencil when desiring freedom of line or richness of tone. The technique of rendering involves the use of the pencil point for outline drawing and for shading in a crosshatch or stroke on top of stroke manner alternating directions. Other shading effects are achieved by using the broad side of the point, blending and varying tonal value by touch or pressure.



Charcoal—

Charcoal pencils are available in degrees of hardness. The technique is similar to that of graphite pencil, but it demands more care because of greater tendency to smear. This smearing property can be used to advantage in shading by employing the finger or a paper stump or a piece of cotton to spread the charcoal into gray tones. The results are softer and more velvety rich than graphite. A rough textured paper is desirable for best effects because it provides a tooth to which the granular pigment of the charcoal can cling. The picture should then be sprayed with fixative to bind the charcoal to the paper.



Grease—

The grease pencil technique is similar to that of graphite pencil but greater care should be taken since erasure is impractical and sometimes impossible without leaving an undesirable smear. Shading should be done by strokes on top of strokes - varying the direction and pressure for tonal value. Grease pencils, such as China markers and lithographic pencils, also come in various degrees of hardness. Papers of various textures can be used, but a rough, pebbly grained paper is the most suitable.

Materials, Tools, and Processes

FOR DRAWING AND PAINTING

Colored Pencils—

The technique with which this medium is used is similar to that of other pencils but more nearly the same as grease pencil because of a wax or grease content. Shading is accomplished by applying stroke on top of stroke varying direction and pressure. Some tones may be achieved by using the broad side of the point. Some smearing is possible but most blending of tone is achieved in a concise, crisp stroking of the point. Whatever the manner of application, the medium should be used with strength and boldness to overcome a tendency to paleness of color. The paper used should be hard and smooth, or hard and slightly textured.



Ink

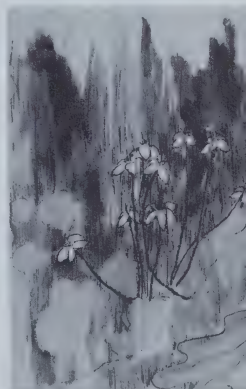
Pen and Ink—

This is an exciting and gratifying medium as a means of expression. The pen point lends itself to a crisp, concise style of rendering. Textures and tonal values are built up of separate strokes that are determined by the object described. Strokes may be long, short, straight, wavy, horizontal, vertical, diagonal, criss-crossed as in crosshatching, or dotted as in stippling. Variety is added according to flexibility of the pen point and thickness or thinness of strokes or lines. Best results are obtained with a smooth, hard paper but some rough, absorbent papers are suitable.



Brush and Ink—

This technique gives flexibility in line and tone. All of the shading techniques of the pen can be simulated with a brush. Variety is added to this by the use of dry brush and/or wash for tonal values. For dry brush wipe the brush on a paper towel until almost dry; apply brush as in painting, lightly stroking paper. Vary direction, pressure of stroke, dryness of brush, and amount of over strokes for changes in tonal value from light to dark. The ink may be thinned with water and applied to the drawing in washes varying the tonal value by the amount of water used or the number of overlapping washes. Outlines and textural effects may be added to this wash drawing by the use of a brush or pen.





Felt Point Pen—

Due to the free flowing quality of the ink and point, this is a broad, flexible medium for sketching. The inks are available in fountain pen sets and in separate cartridges. Some are water soluble; others contain a volatile oil medium. All sets have a variety of points which helps to determine type and width of line. Further variation of stroke is achieved by pressure upon point. Tones are achieved by overlapping strokes. The colors are transparent and produce interesting effects when applied one over the other. The medium is suitable for all types of paper.



Ball Point Pen—

The medium is suitable to a delicate line and shading technique. It is also effective in a free drawing where tones are built up by successive overlapping scribble lines. Black, brown, and red inks are especially effective because of their richness of tonal value. The smooth, even flow of ink is the outstanding feature of this medium as a sketching tool.



Gadget and Ink—

Sticks, twigs, and other objects may be used to carry ink to paper for an interesting experimental technique. The jagged edges, fuzzy tips, or blunt ends of the sticks provide accidental line qualities that are difficult to control. Pleasing effects can be achieved, and with experience the results can be pre-determined to the extent that there is value in experimentation with the medium. It is a dramatic means of stressing the importance of line for establishing mood, character, and description. Most papers are suitable for the medium.

Crayon

Charcoal—

Charcoal is available as stick, vine, and pressed crayon. Charcoal is a versatile medium lending itself to a delicate rendering as well as it does to a broad, free, bold interpretation. It can be used with deliberate strokes for line and for blending, or it can be smudged and blended with paper stumps or the finger for added tonal value. When working it is difficult to keep dark values dark and light values light because the pigment has no binding power to set it to the paper's surface. As a finishing touch the lights should be accented or brought out by lifting the excess charcoal with a kneaded eraser and the darks should be accented with additional charcoal. The picture should then be sprayed with a fixative to bind the charcoal to the paper.

Chalk and Pastel—

Chalk and pastel are crayons of pure pigment combined with enough binder to mold into stick form. This binder does not serve to hold pigment to painting surface. The pigment will smear or brush off unless sprayed with a fixative when painting is completed. The chalk is applied in strokes similar to pencil strokes. These can be blended with pressure applied to the crayon or with the finger or paper stump. Strokes may vary in size by use of crayon edge or broad side of crayon. Colors can be blended and mixed by working one color on top of another. A variety of values may be achieved with the use of white and black. The effect is soft and velvety, but crisp accents of light and shadow or line and texture may be applied at the last minute.

For variety use chalk on paper dampened with water, starch, or milk. Interesting blending effects may be achieved and the colors will not rub off when the paper dries.

Use a paper with a rough surface. A pulpy white or manila drawing paper, a velour paper, oatmeal paper, or a textured charcoal or pastel paper has a rough surface which helps to bind the chalk to the paper.



Crayons (Cont.)

Wax—

Wax crayons may be applied by stroking the point as in pencil drawing. Due to the wax binder it is easy to pile up the pigment with stroke on top of stroke. Tonal values are achieved with overlays of various colors and blending can be done with the broadside of the crayon and with the fingers. Because of the transparent quality of the medium, best results are achieved by applying lightest colors first adding darker colors as overtones or separate color patterns. Interesting effects may be achieved by etching through top dark layers allowing lighter undercoat to show. Using the wax as a resist another interesting effect is achieved by applying the crayon so as to leave exposed spots and areas of paper and then applying a coat of tempera, water color, or ink. Wash tempera and ink off when dry leaving the exposed paper tinted. Crayon may again be applied for final accents.

An imitation of encaustic painting can be achieved by the use of an electric iron or a soldering iron for melting and blending the colors of wax. Care must be taken not to scorch the paper or not to melt the wax too much and lose control of color and form.

Oil—

Oil technique is similar to wax crayon in technique, but blending can be done with turpentine for wash or transparency. Impasto may be built up by use of pressure on the crayon, allowing the paint to pile up and stay where placed with little blending out into the thinner colors of the underlayers of paint. A paper or cloth with some texture is most desirable for use with this medium.

Water Color

Transparent—

Pigment suspended in an aqueous gum solution with little or no inert filler to add opacity is a transparent water color. The medium is effective for careful, concise renderings, but a broad, free approach gives more freshness, boldness, and expressiveness to the

finished work. It is best to work with a large brush on large paper for complete freedom of use. A rough textured paper is most suitable for beginners.

The most accepted approach to water color painting is to paint thin washes of color one over the other, beginning with the lightest color first, until the desired tones and patterns are achieved. Allow some areas to dry thoroughly before washing over with other colors. Allow some areas to remain damp and let additional color washes blend into them. Dark tones are difficult to alter once stated. If they are applied too soon, there is a lack of freedom in manipulating the lighter washes into the desired effects. Apply the darkest tones last as shadow or accent patterns.

Highlights may be scratched into the painting with a knife, scraping through the color to allow the white of the paper to show. This adds sparkle to the painting and aids in giving solidity to the forms.

Line may be added for variety and description by using the water color with a small pointed brush or by using India ink with a brush or pen.



For another approach, dampen the paper and apply the color patterns to the moist surface. The colors bleed, run, and blend together achieving accidental hues and tones of interest, variety, and beauty. The paper should be kept moist for each color application. The final painting is free and expressive. If delineation is desired, interesting effects are possible by using pen and ink before the washes of color dry completely. Allow some of the lines to remain sharp and clear as drawn on the dry portions while others are allowed to blend and fuse into the damp areas.

Opaque Water Color—

Pigments that are usually transparent are made opaque or heavy by the addition of various amounts of an inert pigment such as chalk, or white pigment such as zinc or titanium. Commercial opaque water colors vary according to chemical binders. Certain combinations have established particular types of paint with accepted usages.

Tempera Poster Paint — Tempera is a versatile painting medium. Its smooth, creamy texture can be used to cover small and large areas evenly and completely in a one coat application. The colors dry to a velvety mat finish. Over painting of layers may be done with little danger of flaking.

Tints, tones, and shades of every hue may be mixed in a cup or jar before application, or they may be mixed on the painting surface by dipping the brush into two or more colors before application. The first method produces a flat, poster like quality; the second simulates the variation and richness of a casein or oil painting.



Heavy water color paper or illustration board provides the best painting surface. It may be used equally well on papers of smooth or rough texture.

Casein — Casein is a paint containing a milk base binder. Similar to tempera in application, it is easier to use in obtaining color variations and in building up impasto. The overall results are pleasing in depth and richness of color.

The paint is durable and may be varnished to appear as an oil painting when used on a rigid support.

Casein white may be used with transparent water colors for an interesting variation. The colors are more brilliant than the use of an all casein medium. Added richness may be obtained by glazing with transparent color.



Plastic Emulsions - Many new plastic emulsions soluble in water are available as adhesives. These make excellent painting mediums having characteristics similar to encaustic. It is easy to handle, lends to a variety of techniques, and is inexpensive. The vinyl base glues are in the plastic emulsion category. The commercial product especially prepared for artists use is called Polymer Tempera.

Dry pigment or powdered tempera may be ground to a paste and mixed with vinyl glue and water for application. The technique is similar to the use of other opaque water colors. The medium has a sticky quality that increases with brushing until the point of drying. The drying can be slowed with the addition of water but once the emulsion starts to set-up, blending and brushing become difficult. Speed is important if a smoothly blended quality is desired. Impasto is easily achieved and alternate layers of impasto and glazing give pleasing results. Glazes may be applied with thin, watery coats of the medium and color. Chalk, water color, ink, casein, tempera, and other media used in a mixed technique may be given added interest by covering alternate layers with thinned coats of plastic emulsion. The finished painting has the appearance of layers of color imbedded in plastic. A heavy water color paper or illustration board is suitable for use with this medium.

Oil Painting

When pigment is ground in linseed oil or poppy seed oil and applied with the use of turpentine, linseed oil, or varnish, it is an oil medium. Due to the slow drying property of the oil, the medium is not the most suitable to the short, high school period. Time does not allow for proper pursuit of this complex medium, but use of the more simple techniques can be a satisfying experience to the student.

The support for an oil painting is usually canvas, canvas board, or masonite. Wallboard, cardboard, or heavy paper may be used for experimental purposes. The surface should be given a glue size to keep the oil from penetrating. Canvas or canvas board may be obtained ready sized and primed. Unprepared canvas, stretched on a frame, and masonite should be given two to three sizing coats of a good grade of hide glue. After this is dry, apply three or four thin priming coats of white lead or flat white oil paint. Use turpentine for thinning. The masonite panel should be treated the same on front and back to prevent warping.

The medium is the basic determinant in the approach to oil painting. The medium serves two purposes: (1) to thin the paint to aid in its application, and (2) to adhere the paint to the canvas in a permanent coating. The first layer of paint should be thinned with turpentine to allow it to penetrate into the canvas and to give a base coating for the succeeding layers. The next coat may be of paint as it comes out of the tube, or it may be of paint thinned with a linseed oil mixture (one part turpentine to two parts linseed oil) or a varnish mixture (one part turpentine to one part linseed oil to one part damar or copal varnish). Each succeeding layer of paint should contain as much oil and varnish as, or more than, the preceding layer. This process allows the layers to dry properly and prevents cracking or peeling. After the first layer or undercoat, turpentine should be used only as an aid to the drying of oil and varnish, and as a cleaner for brushes.

Undercoat Method—

Apply an undercoat layer thinned with turpentine. Paint all areas and objects using the middle value of the intended color or a dark or contrasting value which will be used as the shadow of the object. Cover all white areas establishing an immediate relationship of color and form.

Block in all shadow patterns or areas of darkest values to establish the basic movements of design and to give the forms a certain solidity. Apply a highlight to all forms, mix and blend into middle tones and shadows, and complete description of object at once; or, preferably, apply highlights throughout painting and add color, mixing and blending a little at a time to bring up every area of the painting at an equal rate.

Allow to dry from time to time before applying the next layers of paint. If underlayers of paint are not covered completely but are allowed to show through in some areas, a greater depth of color is achieved. Each application should add further to the description of the forms, enrich color and tonal value, build textures, and create mood, working toward completion of the painting.



Corrections are easily made by overpainting. Every area of the painting should be subject to change until the entire picture is completed. The final stage is a refinement of texture and line, and the addition of dark and light accents.

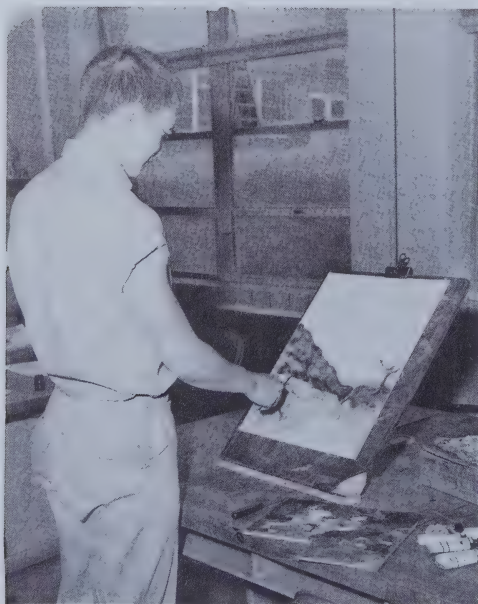
Oil Painting (Cont.)

Direct Method—

The canvas may be left white or it may be given an overall undercoat of a thin layer of a dark color. The earth colors are most frequently used. Paint directly, mix and blend until area or object is completely described. Begin with sky or background, proceed to next area and work forward to front of picture plane, painting wet into wet until all areas and objects are finished.

Blend all colors on the canvas by dipping the brush into two or more colors or by working one color into an already applied color. Bristle brushes are most suitable for this method of painting. Sable or hair brushes smooth out the paint too much and tend to create dull, muddy colors. Bristle brushes allow the paint to remain clear and bright and to stand up in distinct strokes as applied by the brush.

There will be some difficulty in obtaining deep darks and bright highlights, but with a little experience the blending of wet into wet colors can be controlled to produce brilliance and depth.



By completing the painting while all the paint is wet, the problem of thick over thin is eliminated.

The charm of the direct method is due to the brilliance and freshness of color and to the spontaneity of paint application.

Brayer Painting

Using a block printing brayer as a painting tool, roll it into transparent or opaque water color, printing inks, or oil paint and apply to paper or cloth. Work for interesting patterns and tonal effects by running the brayer in various directions and by overlapping and repeating strokes. The edge of the brayer may be used to apply line, and linear patterns may be achieved also by wrapping string around the brayer. Other devices may be placed on the brayer to give textural patterns. Textured surfaces may be placed under the paper allowing the brayer to mark as it hits the high ridges of the texture.



The style of painting is abstract. It may be completely non-objective in subject content or it may be representational to a certain degree.

Mixed Media

This method or technique of painting began as a combination of a wash medium with a line medium, such as water color and ink line, and water color and charcoal. Almost any combination of mediums is now considered possible as an experimental activity. Many interesting effects can be achieved in this manner. The process is used by illustrators with good success. Some effective combinations are transparent water color over chalk with or without the addition of ink line; colored inks over casein; chalk, water color, casein, and ink; colored ink applied with a brayer over chalk.

Tempera

The popular practice of applying the name **Tempera** to commercial poster or show-card colors has made it necessary to refer to real tempera painting according to the emulsion involved in the particular technique. Tempera mediums are emulsions which are stable mixtures of an aqueous liquid with an oily, fatty, waxy, or resinous substance.

Egg Tempera—

The traditional egg tempera emulsion involves the use of the yolk only. The presence of a little egg white does not harm the mixture, but any amount will increase the drying rate and lessen the ease of brushing. The best method to separate the yolk from the white is to pour back and forth from the half shells until all the white is drained away. Place the yolk in the palm of the hand and gently pass it from hand to hand, drying each hand between passings. When the skin of the yolk is dry, lift it gently by the thumb and forefinger and suspend it over a jar. Puncture the skin at the bottom with a knife and allow the yolk to flow out.

The pigments are ground in distilled water with a muller and stored in small jars, or they may be ground with a muller or palette knife on a glass palette in small amounts prior to immediate use. Prior to painting, an equal amount of color paste and egg yolk are mixed together. The paint is applied to the support by the use of hair brushes dipped in water to thin the paint mixture to application consistency. The best support for egg tempera is a gesso panel. Such a panel may be made by sizing and priming the front and back of a piece of plywood or untempered masonite. Sizing should

consist of three to four thin coats of a good hide glue. Four to twelve thin coats of gesso, a mixture of whiting and glue, is used for priming. The absorbency of the gesso ground allows the egg emulsion to penetrate and bind the paint to the surface. The panel should be sand papered to a smooth finish.

Transfer a working drawing to the gesso ground by using a chalk covered paper. Go over the light chalk lines with a thin water color solution. Do not make lines too strong in color. A thin wash of color using the egg emulsion may be applied to the drawing to seal the gesso panel and prevent heavier additional layers of paint from penetrating and destroying the brilliancy of the white panel. The total effect of the painting depends upon the luminosity of the white undercoat.

Proceed to paint by applying color thinly in strokes and crosshatches. Model as in the crosshatch technique of pencil or pen and ink. The traditional process is slow and meticulous, but some free and spontaneous methods may be employed, using the wash technique of transparent water color. Variations may be obtained by glazing with oil and varnish washes.



Gum Tempera—

The gum emulsion is made by dissolving gum arabic to a heavy, sirupy consistency and adding the oily ingredient slowly. A typical gum emulsion is made by combining five parts of gum solution, one part stand oil, one part damar varnish, and three-fourths part glycerin. The support and pigment preparation is similar to that used in egg tempera but the paint application is easier. The gum emulsion dries slowly and can be applied in a thin, smooth manner or with heavy impasto. When freshly dried, care must be taken to prevent disturbing the under layers of paint. The gum solution is not as water-resistant as other temperas.

Egg-Oil Emulsion—

One part egg yolk mixed with two parts stand oil or linseed oil or an oil and varnish mixture and thinned with one part turpentine gives a painting medium which is easily handled in a variety of ways. This emulsion is not water soluble and does not produce the same qualities as other tempera paintings. In application the egg-oil emulsion resembles the oil technique. If the egg yolk content becomes more than one third of the total solution, the emulsion becomes an aqueous mixture and cannot be thinned with turpentine. Any of the aqueous tempera or oil-resin mediums may be used to paint into wet areas of the egg-oil painting for scumbling effects.

Care and Use of Art Brushes

Art brushes will perform better and last longer if used correctly and given the proper care. A few important hints may be helpful.

- Keep water color brushes and oil paint brushes separate.
- Never use a water color brush in oil or vice versa.
- Identify them clearly.

Clean the brushes thoroughly after each use. Neglect will cause the paint to harden at the edge of the ferrule and spread the hairs out of shape.

Never let the brush rest on the hair. Preferably hang the brush head down from the spiral spring of a brush holder. This will allow water to drain off the brush.

Brushes for use in water color, tempera and all other water-soluble mediums:

- Wash in cold water using a mild soap only when necessary. The use of hot water will affect the life of the hair. Be careful that no paint is left at the edge of the ferrule.

- Straighten the hair to the natural shape of the brush before storing.

- Rinse brush repeatedly while in use to keep the heel free of caked-up paint.

Brushes for oil painting:

- Clean paint from brush with waste paper or rags. Lather the brush in the palm of the hand with mild soap and water (cold or warm). While cleaning, rinse repeatedly until all paint is removed from the edge of ferrule. If the paint is slightly dry use mild solvent, then wash with soap and water.

- Before laying away, restore original shape of hairs and bristles.

Solvents for cleaning brushes:

- Brushes used in house paint, oil stain, enamel, or varnish, should be cleaned in turpentine or a commercial solvent.

- For shellac or alcohol stain, clean with alcohol.

- For lacquer, use lacquer thinner, preferably a thinner made by the manufacturer of the lacquer used. Follow each of these with mild soap and water.

Commercial design is the art of communicating a message visually. The message may sell a product or promote an idea or ideology. It may take form as a poster, billboard, container, magazine, or newspaper advertisement. Whatever the mode of expression, the design must always be simple, forceful, and easy to read.

Commercial design has more significance for the advanced high school art student than for the beginning art student. The objective for commercial design can be threefold:

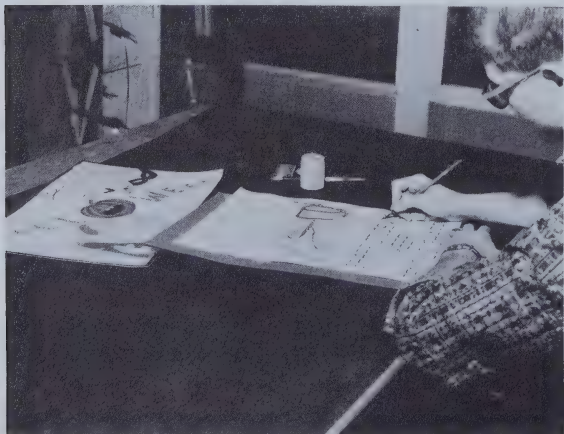
to acquaint the general art student with the commercial aspects of art so that he will become more aware of the values in good and bad design and therefore become a more discriminating consumer

to introduce the talented or skillful students to the intricacies of commercial design so that they will know whether or not they want to pursue such a career

to prepare talented students for further training in a professional school.

Only a small percentage of students are actually destined for art careers. Therefore, it may be wise to assign the more difficult projects primarily to those students who are interested. Posters are widely used in school activities and make a good general assignment. Package design or fashion drawing would be more wisely assigned to the advanced student who has expressed an interest in one of these areas.

As in other forms of art, it is the teacher's role to guide the student toward original thinking and away from copy work of any kind. Adequate preparation is also important. To teach advertising design, the teacher should have a basic understanding of the reproduction processes and the procedures used in designing and preparing advertisements.



Even talented students, if permitted to specialize extensively, tend to develop a limited outlook and a stereotyped style. Students intent on an art career need a broad background in the principles of design, drawing, and painting.

Commercial Design

Desired Attainments

Students will have developed an understanding of commercial design if they

simplify an idea through the use of symbols

employ the principles and elements of design to create dramatic visual experiences

differentiate between signs, posters, and illustrations

demonstrate an effective use of color, and black and white

have used or observed the use of several commercial media

develop the ability to condense the written message so that it is forceful, interesting, and readable

understand several printing processes and how commercial work is prepared for these processes.

Suggested Activities

Posters
Billboards
Counter cards
Containers
Record album covers

Newspaper and magazine advertisements
Book and magazine covers
Story illustrations
Fashion illustrations
General industrial illustrations

Commercial illustrations includes every possible kind of illustration for commercial purposes. Magazine illustration, book illustration and decoration, scientific illustration, and advertising illustration are some of the areas of opportunity for the commercial artist.



The difference between the commercial and the fine arts are sometimes arbitrary and depend on the artist's sensitivity, originality, and individuality. Throughout the history of books, distinguished artists have been employed as illustrators, and today a growing number of well-known painters and print makers are being commissioned to illustrate advertisements. Because this field encompasses a number of career possibilities, the art teacher should give students who have ability the opportunity to experiment with commercial assignments.

Commercial Illustration

Desired Attainments

Students will have achieved a better understanding of commercial illustration if they

approach commercial drawing and painting with the same sensitivity and concentration they strive to employ in the fine arts

study the work of the best commercial illustrators so that they are able to recognize the techniques of several

work directly from life or still life rather than from photographs or drawings by other artists

become acquainted with some of the printing processes and how drawings are prepared for these processes

develop the habit of reading the art periodicals and annuals, both European and American.

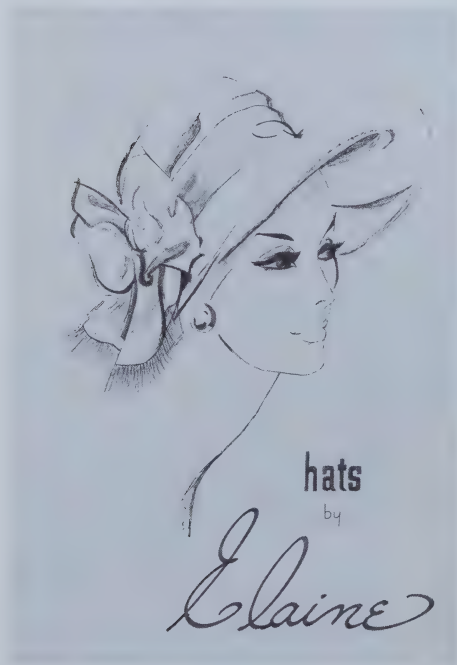


Suggested Activities

Advertising Illustrations

Fashion

Study illustrations by recognized fashion artists as found in outstanding newspapers and fashion periodicals. Observe the proportions of the figures, the variety of techniques, the relationships between the layout, the typography, and the character of the merchandise.



Draw directly with brush or pen from the model to learn to eliminate unnecessary details and to stress action.

Draw from life or still life with brush or pen on gray paper adding white for high lights.

Design and illustrate a layout in black and white for sports clothes, suits and coats, or evening clothes.

Design and illustrate an advertisement in black and white for accessories.

Home Furnishings

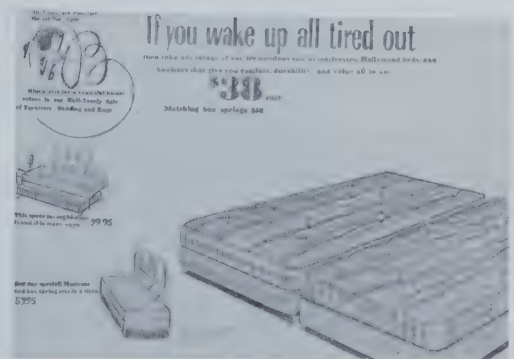
Study the illustrations of furniture in the decorating magazines and better newspapers, giving particular attention to the wash and tempera techniques.

Make a tempera or wash drawing of a living room, dining room, or bedroom.

Design and illustrate a layout for a black and white advertisement for newspaper or magazine showing patio, dining, or family room furniture.

Choose the type of furnishings you would most like to illustrate; design a layout for a magazine page using black and one or two colors; make the illustration.

The units "Fashion" and "Home Furnishings" were selected because of their interest to senior high school students. Other items could be suggested also, for example, sports equipment, automobiles, and food products.



Pen and ink or brush drawings, with or without a wash, are the most used media for black and white illustrations. Tempera, water color, and colored inks are used for color illustrations, however, a number of other media are suitable. The student who is really interested will want to experiment with several media.

COMMERCIAL ILLUSTRATION

Book and Story Illustration

Write a brief paper describing the history of book illustration.

Select a story, poem, or book to illustrate. Read the story carefully before selecting the situations which will be illustrated.

If certain unfamiliar items will have to be illustrated, start a clipping file for reference, not for copying. For example, collect pictures of furniture, clothing and transportation facilities of a particular period.

Decide on the technique to be used. Certain techniques project a particular mood more than others. With the exception of children's literature, most books are illustrated in black and white only. However, any technique or media may be used. Line drawings which require no half tones are frequently used, therefore, pen and ink, brush and ink, linoleum prints, woodcuts, etchings, or engravings would be appropriate.



Design and complete a series of four or five illustrations and/or vignettes to illustrate a story, poem, or book using black and white only.

Illustrate a children's story or poem in full color.

Design and illustrate a book jacket.



Illustrate an episode in literature, event in history, or current events which may be suitable for magazine or book illustrations.

Materials and Tools

- drawing paper
- water color paper
- illustration board
- colored papers
- water color brushes, various sizes
- drawing pens
- ink - black and colors
- water color
- tempera
- drawing pencils
- colored chalks
- crayons
- charcoal
- erasers

materials appropriate to the various types of printing media if block prints, etchings, woodcuts, or other printing methods should be used (See Printing Processes)

Costume designing refers to contemporary dress and theatrical costume. The study of the history of costume provides unique insights into the personalities, foibles, and fancies of previous generations.

Dress design and theatrical costume design offer many careers for both men and women. Costume designing is fun and is also big business. The student should learn to draw a simple figure, and to utilize the elements of design in relation to the human form.

Desired Attainments

Students will have developed an awareness of taste, originality, and the application of design to costume if they

survey the history of costume to better understand the ways in which costume reflects the way of life of a people and to become aware of the styles of the various periods for research purposes

observe current trends by reading several current costume periodicals



become more conscious of the effect of line, proportion, and color in relation to the human figure

learn to eliminate unnecessary details

achieve a sense of appropriateness and individuality in dress and theatrical costume design.

Costume Design

Suggested Activities

Fashion Design

Make a small scrapbook of clippings and drawings of the various periods of costume.

Study a basic commercial pattern to understand how garments are put together.

Design a coordinated sports costume consisting of several interchangeable pieces; a pair of shorts, a skirt, a blouse with sleeves, a blouse without sleeves, a jacket.

Design a fabric; block print or silk screen the fabric; design a costume appropriate for the fabric.

Select a feature from a period costume and adapt it to a design for a contemporary costume.

Theatrical Costume

Read about the history of the theater, giving attention to the costuming and make-up used from ancient times to present day.

Study color relationships to learn to heighten or establish a mood in a theatrical setting.

Read a play, concentrating on the personalities of the characters and the general mood of the action, and design costumes for one act or for the entire play.

Listen to the music for several ballets, musical plays, or operas. Select one, and design the costumes for the leading characters.

Designing theatrical costumes without the stage setting is very difficult because of the color relationships. It is desirable for the students to design the setting in which the costumes will be used and then design the costumes. (See Stage Craft page 206)

Materials and Tools

drawing paper
water color paper
colored papers
illustration board
water color brushes of various sizes

drawing pens
water colors
tempera
inks, black and colors
fabric swatches

Fine lettering, like painting, may be creative as well as interesting. Its uses are varied and much in demand. It is an important and practical means of expression. Lettering may be as individual as a signature. A knowledge of design, layouts, basic letter forms, and alphabets are involved when a student expresses himself successfully through the medium of lettering.

Desired Attainments

Students will have attained a feeling of success if they

understand and solve problems of communicating effectively and with quality

have an understanding of the meaning of lettering

have an understanding of the need for lettering

can use and understand the vocabulary including:

ascenders	flair	serif	miniscule
bar	flick	slant	maguscul
basic strokes	lobe	stem	upper case
body	lower case	swash	
calligraphy	nib	thick	
descenders	quill	thin	



can distinguish basic historic styles of lettering, Roman, Gothic, Italic, Old English, and Script

can control pen or brush to space letters and words well

can feel and understand the effectiveness of media chosen

can produce posters, signs, and advertisements which are effective.

Suggested Activities

Find examples of basic kinds of lettering.

Experiment with pens to discover limitations and possibilities of the tool by doodling and by practicing basic strokes.

Using ink and brush, create quick emotional responses to a spoken word so that the students will be able to freely design a visual impression of the word. Continue by designing letters that give a visual representation to the word. Use suitable words such as string, hot, zip, splash, boom, sleep, and soft.

Take one letter and design it in four or five different styles.

Design and make posters using letters made with brush or pen.

Make a bulletin board display using lettering of different types including 3-D and cut letters.

Design initials and monograms.

Letter -- proverbs, Bible verses, poetry or mottoes and enhance by using illustrated letters.

Use letters as motifs for border and surface repeat designs.

Materials and Tools

brushes
pens -- nib and brush
mechanical drawing pen
scissors
crayons
smooth finish paper
sticks
graph paper

penholders
India ink or black drawing ink
colored ink
pencils -- soft, medium, and hard leads
erasers
T-square or metal edged ruler
felt-tipped pens and markers

A montage is a composite picture created by using parts of, or entire pictures and superimposing them one upon another. Lines may be added with ink or tempera paint for achieving interesting relationships of areas and qualities of unity. Areas from newspapers, catalogues, or magazines from a printed page, in black and white or colored, may be cut into desired shapes; a letter or a part of a word may be used; textured swatches may prove effective for patterned areas.

Montages may be nonobjective - purely abstract, or pictorial designs. The type of montages made by a class may be determined by the purpose as a part of a poster, a notebook cover, or they may be made for the purpose of discovery and exploration of relationships of textures, colors, values, shapes, and lines. In either case the students should approach the experience with an attitude of experimentation through which each one will make choices and find an effective arrangement of the cut swatches of paper for his montage.



Desired Attainments

Creating montage should help the student in

- encouraging closer observation of ways in which shapes, textures, and colors can be related

- freeing the imagination from the usual limitations

- developing power to discover and invent new combinations of ideas with familiar materials

- stimulating an awareness of the principles of design found in his daily experiences.

Montage

Suggested Activities

Compose montages for

school events posters
seasonal holiday posters
decorations
portraits

program covers
abstract designs
place cards
notebook covers

Materials and Tools

discarded magazines, catalogs, and newspapers
discarded photographs
background paper
paste
brushes
scissors
ink
paint
pencils



A mural is a large wall decoration which may be painted directly on the wall or painted on some other material which is then fastened to the wall. A mural is an integral part of the wall on which it is painted. Its design must be considered in relationship to the wall and to the surrounding architectural structures.

A mural may be pictorial or decorative.

Border Murals

A border mural is a long continuous unit with a relatively complete story. It may have one idea of central importance with several ideas of lesser importance designed to direct attention to the main theme, or it may have a central thought which is developed through a sequence of highlighted points of interest. Whether it contains one central idea or a series of ideas, the border mural should be viewed as one picture.

Panel Murals

A panel mural may consist of one picture or a series of related pictures. A one picture panel mural usually contains one important thought or one main thought with related ideas of lesser importance accenting or giving interest to the main theme. A multiple picture panel mural consists of a series of panels each depicting a different phase of a central theme. The panels may appear side by side, may be spaced by decorative panels of related or non-related material, or may be divided by architectural structures such as doors, windows, and ceiling beams. Each panel may be viewed as a separate picture, but a series within the same area should be related to one collective theme.

Desired Attainments

Experience in mural painting should develop the ability to

design on large scale proportions

adapt design to available wall space

harmonize pictorial and decorative design to mode of architecture

select thematic material essential to meaning of pictorial situation

combine ideas and situations into a unified whole to be designed as one picture

judge the effect of distance and the angle of view upon the design

know and appreciate historic achievements in mural painting.



MURALS

Suggested Activities

Subject Matter

School Activities

Sports
Departmental activities
Departmental subject matter
Extracurricular activities

Historical

School progress
Town development
State development

Materials, Tools, and Processes

wallpaper
wrapping paper
butcher paper
construction paper
corrugated cardboard
masonite
wallboard
plyboard
canvas
muslin
burlap
chalk
tempera
casein
latex base paint
oil base house paint

artist oil paints
ceramic tile
colored glass
wire
metal
wood
cloth scraps
glue
turpentine
linseed oil
brushes
scissors
pencil
charcoal
stones
seeds

Temporary Mural

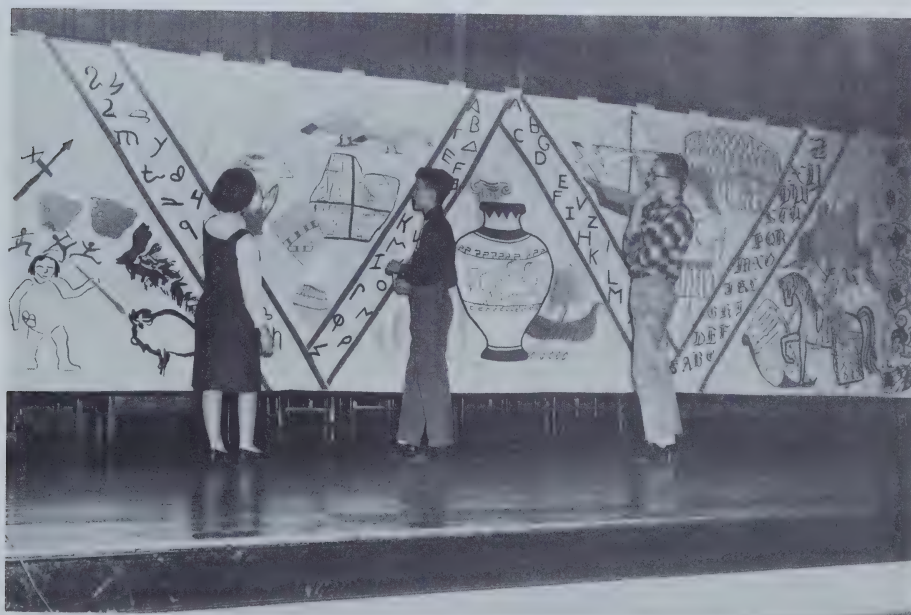
The temporary mural is used for special occasions or for purposes where easily removed or replaced wall decorations are needed.

Seasonal designs, party decorations, and scenic designs for special current events usually require a process of execution that is fast and flexible. The temporary mural serves this purpose well. Inexpensive materials are recommended for this purpose. Most desirable are water soluble paints and heavy papers that will not wrinkle when wet. Wrapping paper, building paper, oatmeal paper, wallpaper, and corrugated cardboard are excellent surfaces to which chalk, tempera, and casein will adhere satisfactorily and dry quickly.

Various types of cloth may also be used. Muslin, burlap, and canvas treated with a glue size are ideal. The cloth may be stretched to a canvas frame or glued to a cardboard or wood backing, or the cloth may be left unstretched to save time and effort.

The temporary mural that is to stay in place for an indefinite time should be constructed of durable materials. Stretched canvas, plywood, wallboard, and masonite make excellent surfaces. Oil or latex base interior house paint, enamel, casein, and artist oil paints adhere well and are subject to little change over a period of time.

Other materials which may enhance mural construction include: enamelled metal, ceramic tile, ceramic and glass tile mosaics, wood inlay, cloth and paper collage, wire sculpture, and wire sculpture combined with painted background.



MURALS

Permanent Mural

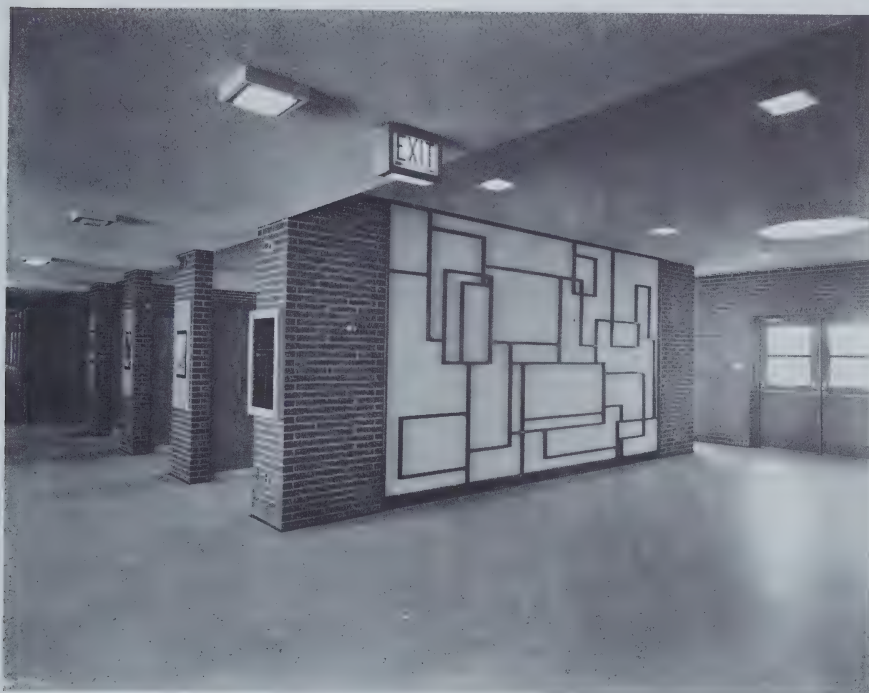
Permanent murals are usually painted directly on the plaster, wallboard, wood panel, or brick wall surface, or on paper, cloth, or wood panel that is glued or fastened securely to the wall.

Care should go into every detail before final execution. A small-scale plan or sketch of the mural design should be made to establish proportion of the panel to the wall space. The design should be appropriate to the wall space, and to the architecture of the room. The theme of the design should be purposeful and should sustain interest over a period of time.

Due to the size, location, and purpose of the permanent mural, the medium is most often reserved for the monumental depiction of historical progress, notable deeds, and outstanding accomplishments. Departmental activities, extra-curricular activities, fields of development and achievement, school history, and local town and state history are examples of subject material suitable for the permanent mural.

The student should become familiar with the traditional forms of mural painting though they may be too difficult for execution in a high school art program. Knowledge of the techniques of fresco and encaustic will aid in the understanding and approach to more modern, more flexible techniques.

Artist oil paints, water and latex base interior wall paints, enamels, and oil base interior paints are suitable and easily handled mediums for permanent murals. Plaster walls should be sized with glue or a commercial sizing and given a priming coat of a ready-mixed primer or flat oil to give a good ground for the painting. Wood and masonite panels should be treated in the same way covering front and back surfaces equally to prevent warping. Canvas glued to the wall may also be sized and primed in the same manner.



Panels of enamelled metal, ceramic tile, and ceramic tile and glass mosaics may be used as permanent wall decorations. Wire and metal sculpturing may be embedded in the wall as a separate medium or in combination with other mediums for three-dimensional effects.

Either type of mural project is ideally suited for group participation.

Good photography is more than just a technique for making visual records. It becomes an art when the photographer uses the film to express his own feelings toward the subject. No media is an art within itself - it is man who makes the material a work of art.

Photography has developed rapidly and has become an important part of our daily lives. For this reason it deserves a place in the art program.

Desired Attainments

The student will have grown in his understanding and appreciation of art in general if, through photography, he has developed

an understanding of the importance of good composition

an appreciation for good photographs

willingness to experiment and to express himself

an understanding of the importance of effective lighting in establishing mood and developing composition in a photograph

a basic understanding of the mechanics of picture taking, developing, and printing.



Suggested Activities

Study the history of photography and works of outstanding photographers.

Learn the functions of the different parts of the camera such as lens, shutter, view finder, range finder, and auxiliary lenses and filters.

Discover characteristics of different types of film.

Learn to take proper care of photographic equipment.

Photography

Practice arranging subjects in order to get the most pleasing effect.

Experiment with lighting to produce different effects.

Learn the mechanics of developing and printing.

Learn the importance of cropping, mounting, and framing pictures to their best advantage.

Investigate photographic processes which do not require a camera such as blue printing, lumiprinting, helioprinting, and photograms.



Materials and Tools

- camera
- film
- flash attachment
- flash bulbs
- light meter
- photo flood bulbs
- dark room
- chemicals for developing and printing
- printing paper
- basic developing and printing equipment

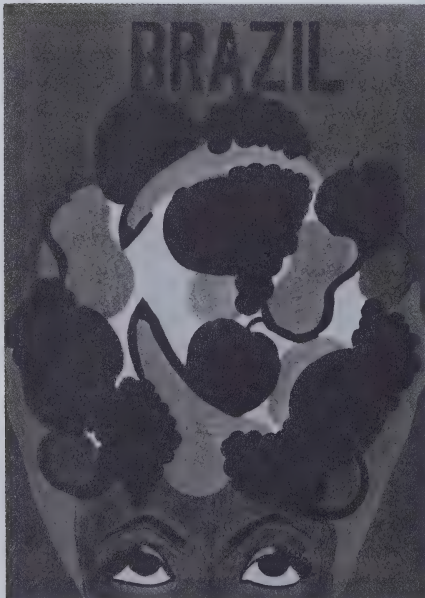
Composing a Picture

Although the artist can greatly enhance a picture by developing, printing, matting, and framing it in an artistic and creative manner, the planning that is done before the moment the film is actually exposed is of primary importance. In planning a photograph, the art student will find himself faced with the same problems that he would have in planning any other work of art. He takes into consideration the effect of texture, dark and light patterns, line movement, space and form, and possibly color. A well composed photograph must have balance, rhythm, variety, emphasis, and unity. Although minor corrections may be made by retouching, it is difficult to make major corrections once the shutter is pressed.

The principles and procedures used to design billboards, counter cards, record album covers, book and magazine covers are basically the same as those used in designing posters. Posters, so much in demand in the schools, will be discussed to demonstrate these procedures.

Students should develop an understanding of the basic differences between posters and pictures, and posters and signs. A poster is illustrated, but the pictorial element should be greatly simplified, at least at the beginning. A sign not generally illustrated, and may be very simple -- for example, the highway markers for curves, or a sign may be very complex with much lettering.

A poster must be simple, dramatic, and tell its message at a glance. A background in the elements and principles of design will help the student to understand good posters. Preliminary design work in a variety of media will help prepare him for this assignment. Direction of line, variety of sizes, and emphasis are very important. These factors combined with color provide the drama necessary for strong visual impact.



Posters

Suggested Activities

Design

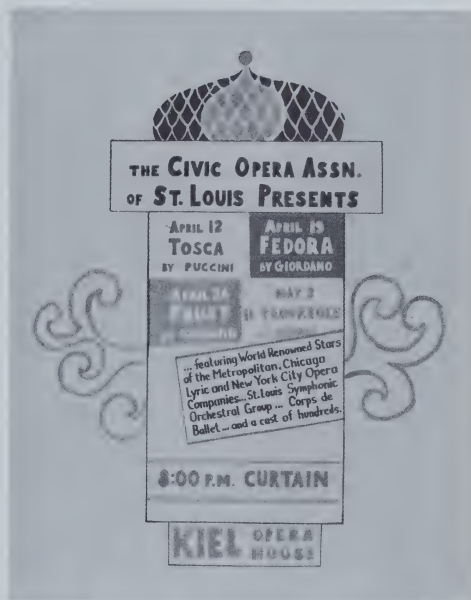
posters coordinated with school and community activities so that the posters will be used

posters correlated with world affairs - the United Nations, CARE, International Relations

posters advertising a career -- in the armed forces, agriculture, electronics, medicine, or science

billboards advertising air travel, a food product, electricity, fuel oil, or an automobile

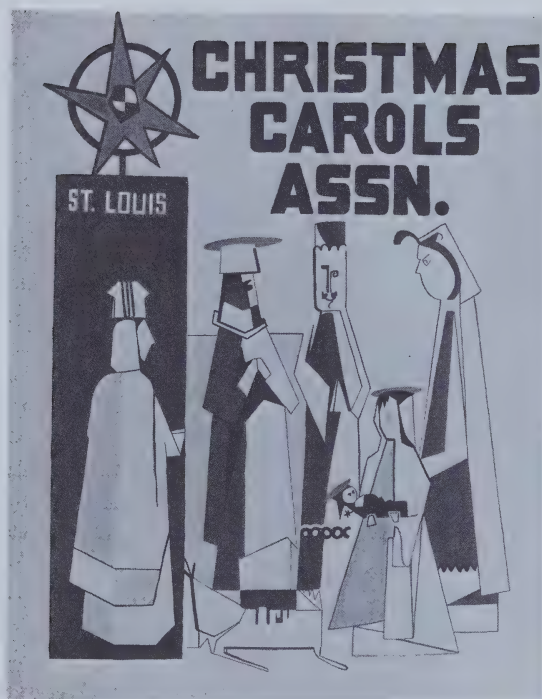
counter cards advertising a product - cosmetics, vitamin products, sun tan lotion.



Study good posters -- Note influence Toulouse-Lautrec had on contemporary artists. See the bibliography for references. Also, show the class several posters which are inadequate. Discuss the good and bad qualities of the posters.

Discuss ways in which the character of the poster may be altered by the colors and the type of lettering used to give the poster gaiety or dignity.





Explain the ways posters are reproduced commercially, such as silk screen, letter press, offset.

Posters should not always be rendered in the same way, therefore, encourage the use of a variety of media. Tempera, cut paper, ink, chalk, and crayon can all be used successfully in any combination.

Be certain that the students understand the methods they will use to make posters, which are quite different from those used in picture making. Students must plan carefully. Help them to get the most out of their materials and tools. Good appearance in the final product is a must. Plan the original design on tracing paper, newsprint, or layout paper, and transfer the design to poster paper. Do not use carbon paper for the transfer. The carbon resists ink and paint. Graphite rubbed on one side of a piece of tracing paper is a satisfactory substitute for carbon paper.

Consider the letters or words as shapes to be incorporated into the composition when designing the poster. The lettering or type face must carry out the character and meaning of the poster. Script or any of the many type faces may be used, but the lettering must be readable. The student should practice the type of lettering he has chosen, so that the letters fit comfortably and effectively together. The letters may be cut from paper and pasted on the poster, or brush or pen may be used with ink or paint. The lettering may be brushed in freely, or the letters may be outlined with a ruling pen and then filled in. Silk screen techniques or stencils and spatter guns may be used for both the lettering and illustration.

Have the student decide how many colors he is going to use before he makes the design, providing the teacher has not already limited the number when making the assignment--two, three, or four colors on the ground color. Generally speaking poster illustrations should be simplified with fewer gradations of tone and color.

The choice of a symbol or idea to illustrate the poster is frequently the most difficult part of the assignment. Students will achieve greater success if they learn to eliminate unnecessary details, and put the emphasis on one central theme or idea.

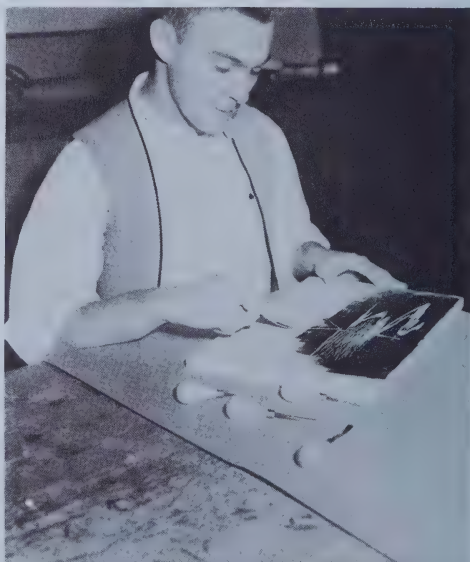
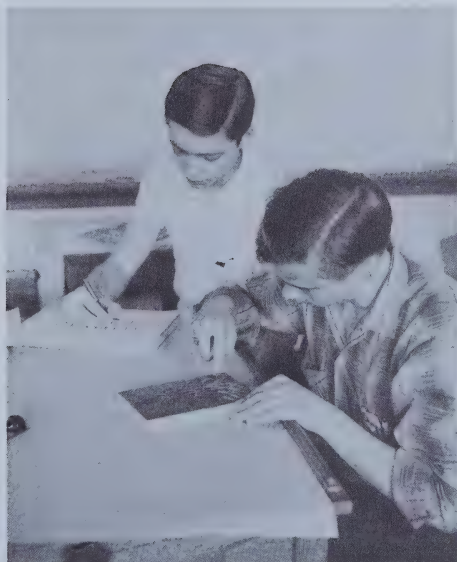
Materials and Tools

- rulers
- brushes, varying sizes and types
- pens, lettering and drawing
- paste and rubber cement
- scissors
- tempera
- water color
- ink, black and colors
- spatter guns
- mat knife
- air brush
- ruling pens and ink compasses
- colored construction paper
- tracing paper
- stencil paper
- poster paper or board
- illustration board
- newsprint
- pencils
- graphite sticks
- erasers
- chalk or pastels
- crayon
- stencil knives
- silk screen film
- organdy
- silk screen frame
- squeegee
- frisket paper



The reproduction of design through the various printing processes is one of the areas of creative arts which can be both challenging and satisfying to the high school art student. The craft of printing is of ancient origin and was used by the Egyptians centuries ago. The Japanese excelled in the art of woodcuts. Printing was introduced into European art during the Middle Ages and has served as an effective medium for the dissemination of knowledge. It attained a high level of artistic perfection in the works of such artists as Dürer, Mantegna, Rembrandt, Hogart, and Toulouse-Lautrec in their respective periods.

This area of graphics continues to broaden and expand with the introduction of scientific methods of reproduction of design, innovations based on the time honored principles of printing, and the availability of new materials. However, the basic processes of engraving, etching, and lithography remain the same, and each demands a technique peculiar to the process which the student should understand and master. The hand methods of reproduction, in contrast to the mechanical means used today, are worthy of thoughtful and imaginative exploration in high school art.



Printing Processes

Desired Attainments

Experiences with the printing techniques should enable the student to

understand the basic differences in relief, intaglio, and planographic printing

understand the similarities of all printing processes

develop appreciation for the art of printing

become aware of the intrinsic value of prints as works of art and as reflectors of cultures.

Materials and Tools

plate glass for inking slab

inking brayers

printing ink - water soluble and oil

paper - newsprint, construction, manila, white drawing, rice, bogus,
bristol board

kerosene, turpentine, other cleaners

soft, lint free rags

scissors and paper cutter

masking tape, glue, rubber cement

carbon paper

Suggested Activities

Prints - representational, non-objective, repeated motifs

Relief Printing

Relief printing is an ancient and time honored craft which had reached a degree of proficiency by the Chinese some twelve hundred years ago. Until the contemporary period, block prints were in the form of wood engravings of a pictorial nature.

Relief printing suffered a sharp decline and eventually actual decay during the seventeenth century and was not revived for over a hundred years. During the nineteenth century woodcuts were used to illustrate material in newspapers, magazines, and books. The invention of photo-mechanical methods of reproducing illustrations for magazines and newspapers seemed to sound the death knell once more for block printing, but instead it liberated the craft until it has emerged today as a highly respected form of art.

The substitution of the linoleum block affords the high school student with a manipulative medium which is probably more versatile and satisfying to the amateur than a wood block. The techniques of linoleum block printing follow, but if the mature student desires to make a woodcut, the proper gouges and chisels for wood carving should be secured, and then the basic procedures for linoleum block cutting should be followed. The woodcut will render a more concise and expressive print, carrying tonal value which cannot be produced through a single cut linoleum block..



Linoleum Block Printing

In creating a print there must be a satisfying arrangement of the elements of design which will produce a harmonious unit that will serve a purpose.

To prepare a block for printing, cut away those parts of the block which are not to be printed. The areas of the block which have been cut away are called negative areas. The lines and masses of light and dark can be produced with linoleum by three different ways: dark lines on a light background, light lines on a dark background, and a combination of these two with well distributed light and dark areas.

produced with linoleum by three different ways: dark lines on a light background, light lines on a dark background, and a combination of these two with well distributed light and dark areas.

A student may cut directly on the block for spontaneity and freshness of design, or a well planned drawing may be made. Make the drawing the exact size of the linoleum block

and ink the positive areas with black India ink to get the contrasting effect of the finished print.

Transferring the Pattern

For the most satisfying results the design should be reversed. If lettering is used, the design must be reversed. As it is necessary to make an additional tracing in reversing the pattern, care must be taken so that the quality of the original drawing is not lost.

The most simple method of transfer is, of course, to transfer the drawing to the block by using carbon paper. Assemble the drawing and the carbon to the surface of the block and secure with masking tape to prevent slipping. Caution must be taken in using carbon transfer paper as it will carry a rather wide line of grease deposit.

Other types of transfer are also possible. An application of graphite to the reverse side of the drawing has the advantage that the transferred lines are free of the grease deposit and that the transferred lines are sharp and clear. The disadvantage is, however, that the graphite lines are easily obliterated in the cutting process.

The technique of the Japanese wood block printers may be followed by adhering with water soluble glue the tracing made on the thinnest rag paper, face down, to the linoleum block. The cutting is then done through the back of the paper. When the cutting is completed, wash the block with lukewarm water to remove the remaining paper.

To "offset" the drawing, a tracing should be made in non-waterproof ink on light bond paper. Lay face down on the block and cover with white blotting paper. Saturate with ordinary household ammonia and allow to permeate for a few minutes. Apply considerable pressure to the assembly. The caustic action of the ammonia will release the ink to the block. The time limits of this method and the amount of ammonia to be used may be determined by experimentation.

Cutting the Block

The student should constantly refer to the inked drawing for reference in cutting. For intricate work apply India ink to all the positive or printing areas of the design on the block to insure accuracy in cutting. With the knife, veiners, and gouges cut away the negative portions of the block. Hold the knife at a slant, about 30 degrees from the vertical. The characteristic shape of the tools will leave the positive portions of the design standing on a firm, downward-broadening base. Do not undercut these sidewalls. If undercut, the line will crumble under pressure. Always hold the block behind the cutting edge of the tool to prevent accidentally cutting the hand with a tool which may slip out of control. The block may be held satisfactorily by a bench hook, or by the use of a sandbag.

Outline the design by using a small veiner or knife. Use restraint and patience, for precision in all details of the contours are marks of true craftsmanship. After the printing or positive areas are outlined with the narrow trench, it is advisable to widen and deepen this first cut with a larger tool. To complete the cutting process, route the larger areas to a greater depth.

Printing the Block

Printing may be done on a variety of papers, ranging from newsprint to Japanese paper. If a more receptive paper is desired prepare a damp book. Adjust the size of the paper to the size of the print allowing for the desired margin.

If the printing is to be done on cloth, remove the starch from the cloth by washing with mild soap and water. Press the cloth smooth.

Ink the block with linoleum block printing ink, either water soluble or oil ink, depending on the purpose of the print. Regular printers ink, called job ink, is cheaper and will produce fine prints. Use a piece of plate glass as an ink slab. Place a small amount of ink onto the glass and run a brayer through the ink until it covers the roller and becomes "tacky."

The printing process may be accomplished in a number of ways, varying from printing with hand pressure to printing with a mechanical press. The weight of the printer's own body may supply sufficient pressure for satisfactory printing, by either standing on the block or throwing the weight forward on the hands. It is desirable to have a pad of paper or cloth under the surface to be printed.

Reference points or a jig are invaluable in obtaining accurate reproduction of design. Do not stack fresh prints. Leave the printed surface exposed to the air. Stack and press when dry.

Multicolor Block Prints

For multicolor prints, a separate block must be cut for the printing of each color. The blocks are keyed to each other in order to register properly in the printing. The transfer of the pattern and the cutting of the multicolor blocks are done in exactly the same manner as described for single color cuts.

In printing multicolor blocks it is advisable to print lighter colors first, especially when opaque colors are used. Transparent colors combine to make additional hues when they are superimposed. A simple background color can be achieved by first printing from a solid, flat block. Two or more colors can be rolled on the same block if the brayer is handled carefully.

Wood Cut



The beginner will enjoy cutting basswood or a clear piece of white pine more than the harder woods such as mahogany. The student may draw his design directly on the board, or he may transfer the design. Painting the surface of the board with colored ink or watercolor will enable the artist to see the areas he has cut away as he works.

To print a woodcut a rather thin, flexible paper ranging in quality from newsprint to rice paper or Japanese print paper should be used. Oil printing inks are more suitable than water soluble inks. Brayer the ink on the wood cut and lay the paper on the surface. Textural effects produced by the grain of the wood give these prints a distinctive quality, therefore, the artist should take care to rub every part of the surface carefully.

Tools

scrive: V-shaped hollow burin
assorted hollow rounded gouges: fine, medium, large, and extra large
Japanese knife
bench hook

Intaglio Printing

Engraving

Engraving is a direct process of incising the surface of the material used by means of a tool. The engraving tool is usually held firmly with one hand, applying pressure directly forward, and the plate is manipulated with the other hand to achieve change of direction in the engraved line. Engraving is an intaglio type printing.

Wood Engraving

Wood engraving is usually done on end grain wood blocks. An engraving is traditionally characterized by fine white lines against a dark background. By using the end grain block the burin can cut in any direction without lifting the wood fiber. The gravers should be held at a flat angle to the block in order to prevent digging into the surface too deeply. The block may be printed by hand or pressure may be applied through the use of a press.

Tools

burins - lozenge shaped
spitsticker - graver with curved sides
tint tool - flat underside
gouges - round or flat

Metal Engraving

Engraving is a direct and controlled technique. The student draws directly on the metal surface, preferably cold rolled copper, piercing the surface with a sharp tool. Pressure on the burin should be applied directly from the back of the tool, never sidewise, and the plate manipulated with the free hand. The burin will raise a burr as it is pushed through the surface of the metal. This burr should be removed with the scraper and the face of the plate burnished and polished. Print under pressure.

Tools

- burin
- scraper
- burnisher
- engraver's charcoal
- jeweler's rouge
- rotten stone or pumice

Etching

Etching or intaglio printing is dependent on the corrosive action of acid on metal to produce incised lines on the plate. It is also the incised line which is printed as the face of the plate is wiped almost clean of ink. A light film of ink left on the surface of the plate produces a tonal quality which enhances the print.

Metal Etching

The plate for metal etching may be of either hard-rolled copper or of zinc. Polish plates that have been exposed to the air should be cleaned with a weak solution of acetic acid or vinegar. The edges should be beveled with a smooth file, and the face of the plate polished with carborundum. If powder is used, mix with a few drops of machine oil to make a fine paste and apply it to the copper with a piece of old felt. When all the scratches have been removed from the face of the plate, polish with silver polish until water stands easily on the surface. Avoid touching the surface with the fingertips as oily fingerprints will prevent the acid-resist from adhering to the plate.

An acid-resisting ground must be applied to the face, back, and edges of the plate. Commercially prepared grounds may be used. A satisfactory ground can be prepared by diluting asphaltum with a small amount of turpentine. If a liquid form of ground is used, warm the plate, and pour the liquid ground evenly over the plate. If a ball ground is preferred, prepare a dabber by tying a piece of kid leather over the end of a padded spool. Warm the plate and apply the ground with a dabber, distributing the compound evenly over the surface.

Beginners should use simple drawings and transfer only the large areas and shapes to the plate. The transfer can be accomplished in several different

ways. If there is a directional pattern which needs to be retained, reverse the drawing before transferring it to the plate. If no pattern is used, the student can draw incised lines directly into the ground on the plate.

One method of transfer is to smoke the plate. After the plate has been grounded, pass the plate back and forth through the flame of a candle until the entire surface is covered with smoke or lamp black. Keep the plate in motion for if held in one position the heat from the candle will blister the ground. Place the drawing over the smoked plate and trace over each line with a pencil. A rubbed chalk transfer can be accomplished by rubbing red conte crayon or chalk on a thin sheet of bond paper. Lay this paper, coated side down, on the plate. Lay the drawing on top and trace lightly. The pressure of the hard lead pencil will release the crayon or chalk to the smoked surface.

The plate is now ready to be etched. A phonograph needle, darning needle, machine needle, or dental probe firmly inserted in a handle makes a satisfactory tool. Etching needles should be dulled. Only what is now drawn on the plate with the needle will etch. Hold the needle as erect as possible and allow the point to glide freely and easily over the surface. Fine lines etch and print easily, producing interesting texture and tonal effects. Tonal values may be achieved by cross-hatching and etching lines close to each other. The acid will attack these areas more vigorously, therefore, avoid minute angles and wide lines.

Often a more spontaneous print is achieved by drawing directly on the prepared plate. Errors can be corrected by repainting with the ground.

Tools and materials

plates: copper, zinc, aluminum - 16 or 18 gauge
 etching needles
 scraper
 burnisher
 hot plate and candle
 acid trays
 acids: nitric acid, C.P.; hydrochloric acid, C.P., acetic acid
 ground: liquid hard ground - 2 parts asphaltum, 2 parts beeswax,
 and 1 part rosin
 abrasives: pumice powder, jeweler's rouge, engraver's charcoal,
 rotten stone
 solvents: benzine, kerosene, turpentine, alcohol

Aquatint

An aquatint is an intaglio tone print. A thin film of powdered rosin is applied to the plate as an acid resisting ground.

Avoid drafts and sudden movements to prevent moving the rosin on the plate. Heat the grounded plate until the particles of rosin take on a glazed and slightly transparent appearance. Remove from the heat and cool.

Aquatint makes use of the same principles of varying biting times as the line etching, but it applies to tone areas instead of line. The acid bites into the copper or zinc in the open spaces between the rosin dust specks and forms tiny cavities that will hold ink. In the succeeding bitings the size and the depth of these cavities are gradually increased in the various areas, which in turn, print in successively deeper tones.

Trace a simple design on the grounded plate, using light pressure. Paint out the highlights with stopping-out varnish before the first bite is given the plate.

The first bite should be brief for a light tint. Rinse the plate and stop out the next lightest areas with stop-out varnish, being careful not to spread the varnish beyond the intended limit. Return the plate to the bath, increasing the biting time for each stage to almost double the previous one. Repeat the operation until the desired tones are achieved. Aquatint and line etch can be combined for line and tone effect.

Tools and materials

- rosin
- dust boxes and dust bags
- assorted brushes
- stop-out varnish

Mezzotint

The mezzotint is a tone print, and is not strictly an etching method because the tones are obtained by mechanical means. In this sense, mezzotint prints are more nearly engravings than etchings; but custom has so long associated them with the latter that they are almost universally classed as a variety of etchings.

A rocker with a series of sharp points on a curved line rolled over the plate leaves a series of small dot impressions with raised burrs around them. When the entire plate is punctured with dots, the plate itself would, if inked, print black. It is therefore necessary to remove the burrs with a scraper to produce tonal values and highlights.

Tools

- rockers, No. 50 - No. 90
- roulettes: drum, chalk roll
- assorted scrapers and burnishers
- plate: 16 to 18 gauge copper

Preparation of Plates

Biting the Plate

Prepare a bath of nitric acid **being careful to pour the acid into the water**. Avoid inhaling the fumes. For copper etching, use one part nitric acid to two parts water. If a zinc plate is used, pour one part nitric acid into six parts water.

Pour the prepared acid bath into a shallow glass dish. Have at hand an asphaltum coated lifter, and a poultry wing feather. Lower the plate into the bath. The biting action should begin after one or two minutes. As soon as the bubbles appear over the design, brush them away with the tip of the feather, otherwise, they will retard the etching process.

For the first bite, let the copper plate remain in the acid until the bite can be felt with the finger nail. As zinc will bite faster, reduce the amount of biting time accordingly. Remove the plate from the acid bath and rinse with water. Cover the areas of the plate that should be lightest in tonal value with stop-out varnish. Repeat the biting process, increasing the length of time the plate remains in the bath, until the desired effects are achieved.

Warm the plate to loosen the ground, and clean the plate by removing the asphaltum with kerosene, turpentine, or benzine.

Preparing Paper for Printing

For best results, paper suitable for the printing of etchings must be used. The conditioning process consists of soaking the paper in clean water until it is well softened, almost soggy. Fill a large tray with water and immerse the sheets singly into it, so that each sheet will become thoroughly wet. Soak from two hours to a full day, for the limper and more malleable the paper the better the chance of a good print.

To keep the paper soft and yet dry enough to retain its natural affinity for ink prepare a "damp book," that is, lay each sheet of moist paper between clean blotting paper. When the stack is completed, lay a stiff board and a weight over the top to apply moderate pressure. Leave weighted for at least an hour before using the paper for printing.

Inking and Wiping the Plate

Mix thoroughly the specially prepared etching ink and a small amount of plate oil on a glass palette. Warm the plate and apply the ink to the entire face of the plate, working the ink into the depressions. The dabber should be covered with a piece of silk or a good grade of felt. Always apply ink by dabbing, never by sliding or rubbing.

While the plate is still warm, the surplus ink should be wiped from the face of the plate. The clarity of the print depends largely on the delicacy with which the wiping is done. Prepare a "fat rag" by rolling crinoline or cheese cloth into a tight roll and wipe the plate with even strokes. When the cloth becomes charged with ink, it is better than a clean cloth. The degree to which the "finish wiping" is carried out is dependent upon the kind of print desired. A heavier ink film left on the unbitten areas will produce a darker tone on the print.

Printing the Plate

For intaglio printing, evenly distributed rolling pressure of considerable force is necessary. The general principle of an etching press is that of a sliding bed moving between two turning rollers. The lower roller is in a fixed position; the bearings of the upper roller are adjustable in their housings, so that the pressure between the two may be varied as required.

Three press blankets of felt are needed. They should be a little smaller than the press bed and staggered in length. One piece should be of a coarse grade such as a piece of saddle blanket.

The inked and wiped plate is slightly warmed on the heater and laid down, inked side up, in the center of the bed of the press. A thin sheet of zinc under the plate, slightly smaller than the bed size, helps in relieving the pressure on the bed itself. The conditioned paper, which has been kept between the damp blotters until now, is laid on top of the plate and covered with a slightly damp blotter. On top of this, lay one or two sheets of ordinary paper, followed by the two thick blankets and the heavier one to complete the packing.

As you roll the bed through the cylinders, the staggered blankets are engaged between the rolls, and the packing is compressed. When the plate is actually engaged, the pressure is increased still more, and while it is slowly and evenly rolled through the press, the transfer of the ink from the furrows of the plate to the paper takes place.

Some plates yield better prints if the press is rolled back again to the starting point, thus passing under the pressure twice. Do not disengage the blankets, merely fold them back over the top roller and lift the print from the plate.

Better prints will come with experience. Some line work can be corrected with a burin or a drypoint needle. Basically, all intaglio printing is done in the same manner.

The wet prints should be handled with the utmost care. Place the print, face up, on a drawing board and either paste a narrow margin to the board or fasten the edge of the print down with masking tape. The print will dry taut. Cut inside the pasted margins with a straightedge razor blade and mount.

Drypoint

The term "etching" for a drypoint is a misnomer for the corrosive action of the acid is not used in this process.

The plate may be copper, zinc, aluminum, or celluloid, and the incised lines are scratched into the plate with an etching tool. The tool should be held at a 90 degree angle when tracing the lines of the transferred drawing. The tool is forced into the plate and the metal is actually displaced in the form of a "burr." When ink is applied to the plate some of

the ink remains banked against the burr and prints, giving the line a soft edge. A drypoint knife and a scraper can also be used to remove the burrs to subdue the color.

If celluloid or acetate is used for the plate, choose a piece at least .025 inches thick. Place the drawing beneath the celluloid so that it is clearly visible, and "etch" the drawing on the celluloid, line for line. Heavy lines are incised deeper. Cross hatch to obtain shadow effects.

Tools

needle: steel, diamond, or sapphire point; dentist burrs; darning needle or plastics
burnisher
scraper
abrasives

Mounting the Print

Leave a margin of white around the plate-mark of your print -- one-half inch on the top and sides and three-fourths inch at the bottom. The mat should be at least three inches at the top and sides, and a full four inches at the bottom.

Write the title of the composition in the lower left-hand corner of the print immediately under the outline of the platemark, and the name of the artist on the same line in the right hand corner. Both items are written in long-hand with a pencil.

An arithmetical fraction such as 20/75 indicates that this particular print was the 20th pulled out of a total of 75. It is understood that no more than the second number indicated have been or will be made from this plate. The plate itself is usually destroyed or mutilated.

The artist must expend upon each individual print a certain amount of handwork and each print varies slightly from all the others in the edition. Each print is truly an original work of art.

Silk Screen Printing

Silk screen printing is an ancient art having been revived in our present century. Designs can be printed rapidly and with accuracy, yet inexpensively. Silk screen is adaptable to many different surfaces and is also versatile in its effects, which range from transparent appearance of water color to the heavy impasto of a gouache, and from the simplest of designs to multi-color effects. It is a direct printing process.

A rigid frame is basic equipment for silk screening. The inside measurements should be about six inches larger than the dimensions of the pattern. This extra space will allow for a three inch reservoir for paint at each end of the frame. The four members of the frame are joined at the corners by flat angle braces, or any of the standard jointures such as a rabbit or miter, so that a rigidity in the frame is maintained without warping.

Silk, cotton, or organdy should be stretched taut over the frame by tacking or stapling securely so that the woof and the warp run parallel with the ends and sides of the frame. The method of waterproofing the frame will vary with the technique of printing. Gummed paper tape or masking tape can be used to cover the frame and the cloth outside the design areas. To waterproof, shellac the tape.

Tools and materials

assorted length 2" x 2" pine for frames
organdy, silk or nylon
squeegee
shellac
tacks and hammer or staples
upholster pliers
solvents and cleaners: turpentine, kerosene, benzine, alcohol

Crayon Stop-Out

Simplify a drawing or painting by leaving out fine details. Abstract patterns are interesting as there is usually an accidental leakage of color through the crayon.

If multicolor printing is to be done, a blackout for each color must be made. The original drawing should be covered with a piece of plastic for protection. Place the screen over the drawing and block out with crayon any portions of the picture that will remain the color of the paper. A register mark should be made for accuracy.

Shellac or mask out the border which lies around the pattern to prevent leakage of the paint. The lightest colors should be screened first. Wash and dry the stencil each time after printing. Continue to alternately stop out color areas with crayon, and print. Washable printing media such as tempera mixed with mild soap powder, tempera and liquid starch, moist fingerpaint, and commercially prepared washable paints are most satisfactory for crayon stop-out screens.



Paper Stencil

The screen may be blocked out in non-printing areas by the use of a firm paper such as bond paper. Either a single unit design or a multicolor print can be made.

The same frame and stretched silk or organdy are used throughout the multicolor printing. Each color is screened through a separate stencil, therefore, all the papers for the stencils should be cut for accuracy in registering.



All areas to be printed in one color should be traced on a single sheet of stencil paper. Cut out these areas with a stencil cutter and attach the stencil to the lower side of the printing frame, anchoring the stencil to the frame with a strip of masking tape. Place in position to print and draw the paint across the stencil with a squeegee. The paint will adhere to the paper stencil to the cloth.

After printing the desired number of copies, remove the paper stencil and clean the screen. When the screen is dry, register the next stencil in the series and print. This process should be repeated for each color to be printed. Interesting effects can be achieved through experimentation.

Film Stencil

Prepared film can be obtained from art stores under various trade names. Some films must be adhered to the screen by using special adhering solutions, while others may be attached by the use of water.

The film consists of two parts: a translucent glassine paper which acts as a carrier, and the dried layer of lacquer which is the stencil proper.

Special cutting tools can be purchased if desired, or a single edge razor blade may be used satisfactorily. The important thing is to have a sharp cutting tool. Place the film over the drawing or design which is to be duplicated, film side up. This assembly should be anchored to a firm surface such as a piece of pressboard or thin sheet of zinc. This base provides a firm surface so that the cut film edges will be sharp rather than bent. Use register marks for multicolor prints.

Using light pressure, cut through the lacquer part of the film, but not through the glassine backing. With the cutting tool, outline all the areas of the same color on one stencil. When the outline is completed for one area, raise the edge of the lacquer and peel the lacquer from the glassine backing to produce the open area of the stencil.

The frame is prepared in the usual way, leaving at least three inches of space beyond the outside measurements of the design. The cloth for the screen should be thoroughly washed and dried before stretching. The frame may also be hinged to a crossbar which has been attached to a piece of pressboard to facilitate exactness in registry of color prints.

Position the cut stencil under the screen in exact printing alignment and adhere to the screen. Moisten a soft cloth with adhering solution, and with the cloth press the screen against the surface of the film. Immediately blot the area with a soft dry cloth to absorb the excess solution. Work from the center outward, adhering and blotting in alternate fashion. Application of too much adhering solution will dissolve the lacquer. Insufficient application will leave the film loose from the screen.

Allow a drying period of fifteen to thirty minutes before removing the glassine backing from the screen. Start in one corner and peel slowly so as not to remove fine detail of the design from the screen.

Finish the screen by applying strips of gummed tape around the inside of the frame allowing the tape to lap over the stencil at least one-fourth inch. Cover the wooden frame completely on the inside and after the tape has dried, shellac. Repeat this process for each color which is to be printed.

Block-Out Stencil

In the block-out stencil-making method, a block-out solution is simply painted on the screen in liquid form with a brush over the fabric areas where the mesh must be closed. Shellac or lacquer may be used, and if oil base colors are used in the printing process, glue thinned with two parts water is a satisfactory block-out material.

Trace the drawing on the stretched screen with medium pencil using as little pressure as possible. Tilt the screen and outline the sketched design with the block-out solution keeping to the outside of the lines. This application will dry in about twenty minutes. The rest of the non-printing areas can then be easily blocked out.

If the block-out solution is too thin or the mesh of the cloth too open, size the cloth with water soluble glue diluted with two parts water. The sized screen may then be placed directly over the design and the block-out solution applied to the non-printing areas in a horizontal position.

After printing is completed, use appropriate solvent to clean the screen; lacquer thinner for removing lacquer; alcohol for removing shellac; and warm water to dissolve the glue.

If multi-color prints are to be made, repeat the process for as many colors as necessary, taking the outline for each succeeding color from the original drawing with strict observance of the guide marks.

Tusche-Glue Stencil

The tusche-glue stencil process is favored by the fine arts serigrapher. Being a paint-on process, shading and textural effects not possible in other stencil-making procedures can be achieved.

Lithographic tusche may be used in liquid form or in pencil form. The former is applied to the positive printing areas of the design with a water color brush. The pencil is also applied to the printing areas, but is slightly more flexible in that delicate shadings can be achieved.

Errors can be corrected before the tusche dries by rinsing out the tusche with water. After drying, kerosene or turpentine will remove the tusche.

After the design for one color has been completely blocked out and dried, dilute glue with two parts of water and distribute along the edge of a

squeegee. Tilt the screen about 30 degrees and draw the glued squeegee with a single stroke across the entire screen. Allow to dry thoroughly and repeat the gluing-in process. After the second application, check the screen for pin holes in the glue and repair with a brush if any appear.

Place the screen over a pad of newspapers and remove the tusche by rubbing the areas gently with a soft cloth dipped in kerosene or turpentine. A solvent of equal amounts of kerosene and benzine may be used if the tusche proves difficult to remove. The thin film of glue over the tusche areas will also be removed, leaving the mesh of the screen open for printing.

For fine line lithographic pencil work, fine mesh silk is more advisable. The natural sizing in the silk is removed by washing before the silk is stretched. Corn starch sizing is advisable if fine line work is to be done. Mix a heaping tablespoon of household cornstarch with a glass of warm water. Dissolve thoroughly. Make the pencil drawing on the silk and then apply an even coat of the sizing mixture. The lithographic pencil is then used directly on the sized material for fine linework or lettering. The sizing is removed simultaneously with the tusche.

Special effects may be achieved with the tusche stencil. For effective imitations of texture, place a material such as grained leather, hard linen, burlap, sandpaper, or similar material under the silk and shade the silk with the lithographic pencil.

Spatter effects may be obtained by using liquid tusche, and a stiff bristle brush. Flick the brush where the spatter is desired. Charge the bristles of a toothbrush with tusche and brush over screen wire for spatter effects. Dry brush effects may be achieved by using hard bristle brushes.

Photographic Stencil

A photographic stencil can be made by using any of the commercially made film sheets and the appropriate solution for rendering them sensitive to light. Specific directions accompany each type of photographic stencil material.

In general, the film deteriorates within a few weeks, so do not stock large quantities.

Printing Procedures

The printing process is the same for all silk screen stencils. A variety of printing paints are available. The factors to consider when buying paints are strength of pigments, uniformity of shade, permanency, dull or gloss finish, and drying characteristics. Some paints are especially made for printing on special surfaces such as glass, metal, or canvas. It should be noted that water-soluble paints should not be used on water-soluble glue stencils.

The squeegee may be a piece of pressed wood, a window washer's squeegee, or a professional silk screen squeegee. The frame should be long enough to allow a reservoir for the paint at each end. Mix the paint thoroughly and pour a liberal amount into the end of the frame.

Place the squeegee blade in back of the paint, incline to a 60 degree angle, and with one pulling motion sweep the paint across the stencil with firm pressure. It is important that the printing paper or cloth be in close contact with the stencil, and it is advisable to place a pad such as a blanket under the printing area. Work rapidly to prevent drying paint from clogging the stencil. If the screen mesh does clog, clean thoroughly.

The fresh prints should not be stacked until thoroughly dry.

Remove the excess paint from the screen and clean with kerosene or turpentine. Wash the screen using care not to damage the stencil. Use soft cloths dipped in the cleaner and work over a pad of newspapers, changing the newspaper as it becomes soiled. Store the screen for future use. Clean and store the squeegee.

Dispose of all oily rags. Thorough cleanliness is a part of good craftsmanship.

Lithography

Lithography is a planographic process of direct printing based on the principle that grease and water are mutually repellent. The original lithographic printing process was perfected on fine grain limestone, because of its affinity for grease pencil, gum, and water.

The art spread rapidly over Europe during the nineteenth century, and stone printing today is held in high esteem by modern artists. George Bellows, Adolf Dehn, and Thomas Hart Benton are among those who find lithography an effective medium of expression.

For most high school students, paper lithography is an interesting area to explore. Specially treated lithographic paper can be purchased from supply houses and complete directions are included.

Metal Plate Lithography

Grained zinc and aluminum plates can be purchased from supply houses. Counter-etch the plate with a solution of 5 tablespoons of powdered alum and a teaspoonful of chemically pure nitric acid dissolved in a quart of water. Immerse the metal plate in this solution in a glass tray. After about 1 1/2 minutes, lift out the metal plate, rinse with clear water, and fan dry. The plate is now sensitive to grease.

Using a hand rest to avoid touching the plate with the arm or hand, trace the sketch on the plate using a non-greasy transfer medium. Complete



the drawing with lithographic media-crayon, pencil or tusche, and dust the plate with talcum powder, or powdered rosin. Rub gently with fingertips and whisk off excess powder. The dusting will strengthen the image by making the crayon more acid-resisting.

An etching solution should be made from four ounces of strained pure gum solution, a mixture of one part gum arabic and two parts water, plus one-half ounce tannic acid and two drops of nitric acid. Brush this solution on the plate, working it from the lighter to the darker areas with a soft brush. Dry after four minutes.

Paper must be conditioned in advance, and the printing ink, inking slab, brayer, felt packing, rags, and press must be at hand. Sponge the plate with a circular motion removing all of the dried gum and any excess water.

Once again cover the plate with a thin film of gum solution and dry. Dip a soft rag in either turpentine or naphtha and remove the crayon drawing with brisk, circular strokes. When all the lines of the drawing are gone, rinse with clear water.

Printing the Plate *

Never let the plate dry. If work must stop for a few minutes, cover the plate with a soaking wet cloth.

Roll the brayer through ink slightly diluted with machine or plate oil. Do not overcharge the roller. "Roll up" the plate, being sure the non-printing areas are damp to resist the ink. The image to be printed will reappear in the black ink. If an oily film appears on the non-printing areas, remove the film with a soft damp rag and roll up again. If the non-printing areas are allowed to dry, they will take up ink.

Lay the plate on the printing bed and cover with a sheet of conditioned paper. Adjust the packing, and roll the assembly through the press. Lift the packing and gently remove the paper from the plate. Lay aside, and repeat the printing process.

*See Page 114

Monoprinting

Monoprinting is not a true reproduction process because only one print can be pulled. There is no stencil or printing surface from which a number of prints can be made. The print is reproduced directly from the original which has been rendered on a smooth, even surface such as a pane of glass.

The design may be pre-planned or spontaneous. Thinner papers with little tooth are more satisfactory than heavier rough surfaced papers. Newsprint or print papers produce good results. There are many ways to monoprint. Two basic methods will be explained. The method for inking the surface is the same for both techniques.

Roll out a very thin, even layer of printing ink on the working surface. Oil ink permits longer working time and therefore provides for a more intricate design. However, water soluble printing inks are quite satisfactory for quick sketches and designs. The layer of ink should be tacky enough to reproduce lines when the drawing is rendered, but should not darken the surface of the paper unless pressure is applied.

Lay the paper on the inked surface. Draw the design or picture on the paper. When the paper is pulled up the drawing has been imprinted on the other side. Or, draw directly on the inked surface with a variety of tools to achieve wide and narrow lines, textures, and values. Lay the paper on the inked surface and rub with the hand to transfer the design to the paper.

The drawings may be printed on colored backgrounds such as water color, cut paper, or chalk. A variety of tools may be used with both methods; such as pens, pencils, orange sticks, or gadgets such as combs, toothbrushes, pieces of wire. Experimentation will provide a basis for selection of the tools to be used.





Creating three-dimensional designs has always intrigued youth. The materials and methods vary with the age, interest, and experience of the students. Availability of indigenous materials may also determine local craft expression. Creating worthwhile objects gives the student great inner satisfaction, as well as gaining for him admiration and respect from his fellow students.

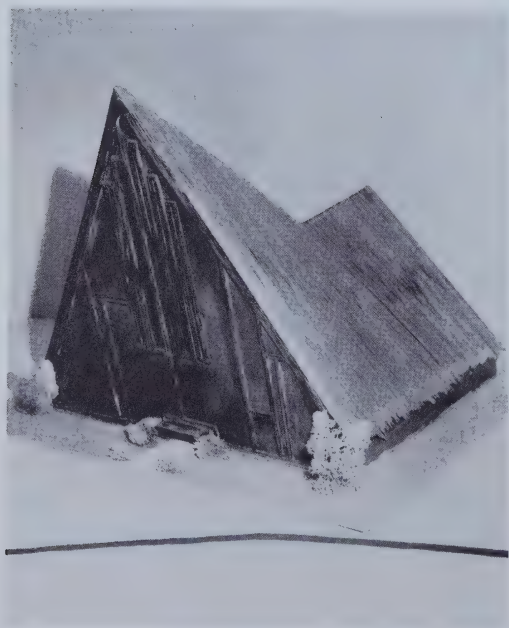
Evidence of man's desire to create three-dimensional art forms has been discovered by happenstance and by excavations of his tombs and lost cities. Some of the most ancient artifacts were fetishes, images of gods, utensils, and jewelry done in easily accessible materials such as stone, bone, ivory, clay, wood, and metal. An investigation of these earliest expressions will add meaning and appreciation to the student's attempts in three-dimensional experiences.

Three-dimensional designs confront students on every hand, so they are quick and eager to envision a better automobile, chair, basket, or piece of sculpture. Since they are not bound by adult inhibitions and doubts, they dare to accomplish what adults fear to try.

The creation of three-dimensional designs provides the student with various art objects for his home and develops in him an awareness of designs which are functional, of good proportion, and personal. He will be more able to detect skilled craftsmanship and sensitive use of the material. His increased appreciation and improved judgment enlarges the demand for the production of better designed commercial goods which is both practical and beautiful.

Three-Dimensional Expression

Architecture is the art of designing buildings and other enclosures. Architecture tells the story of people, reflects their thoughts and ideals, and records the culture of the time. Fine architecture exhibits the same qualities of design as found in other forms of art. Good buildings should show harmony with their surroundings and the best use of structural materials. Every part of the building should be useful and functional. The same spirit should be carried out both in the interior and exterior. Architecture of a deceptive nature is never good. Building counterfeit styles is false architectural expression. Above all, good architecture is honest!



Desired Attainments

Architectural expression will become meaningful if the student

- recognizes good and bad architectural examples

- distinguishes utility and functionalism

- coordinates the building to the landscape

- relates the building to the community

- adapts the building to geography and the climate.

Suggested Activities

Study examples of

- historic architecture
- buildings built for specific climates
- buildings erected for special purposes
- your own community with reference to:
 - public buildings
 - commercial buildings
 - residential architecture.

Learn to read the basic details of a blueprint.

Develop plans for

a home	a railroad or bus station
a church	a shopping center
a school including an art room	a hospital.
a professional building	

Materials and Tools

- ruler
- triangle
- drawing ink and pen
- paper
- water colors, transparent or opaque
- T-square
- pencils
- brushes
- reference magazines, pictures, and books

Forms made of clay were made and used in the earliest times, not only as containers for food, but also as containers for ritualistic offerings, and in many cases as representations of their deities.

Contemporary cultures see a continuation of these ancient usages in sculpture depicting religious images, ornamental holders for candles and incense, as well as our ceramic cookie jars, bean pots, and ovenware. In addition we have dolls, brick constructions, garden lanterns, and the nose cones of rockets.

The high school student is able to make attractive and functional objects for his room or his home. Working with clay he learns to understand the nature of the material, turning its very limitations to his advantage. He learns to exercise great care in construction for mistakes are, in many cases, tragic and costly in time expended.

The ease with which the clay may be obtained and prepared, its flexibility, and functional qualities make ceramics one of our most enduring crafts.

Desired Attainments

Learning and understandings which may develop from experience in ceramics are

comprehension of the relationships of form, function, and materials

satisfaction in beholding a fine completed object

joy in seeing clay take shape through the use of the hands

realization of the limitations and possibilities of the material

awareness of the work of contemporary ceramists such as

Henry Takemoto
Marguerite Wildenhain
Win Ng
Rudy Autio
Kenneth Ferguson
Nan and James McKinnell
Carlton Ball
J. Sheldon

appreciation of the beauty and flexibility of the material

perception of the technique and procedures peculiar to ceramics

ability to recognize good aesthetic qualities in ceramic ware

knowledge of the importance ceramics has played in the development of civilization.



Ceramics



Suggested Activities

Form

flop molds
pinch pots
dish using flop mold
dish using hammock
bowl or vase using coil or strip
box or flower container by slab
method
vase or bowl using hand wheel
figure of animal or person
imaginary shape
bowl or vase on a potter's
wheel
ornaments, jewelry.

Decorate, glaze, and fire clay objects.

Study ceramic forms of past cultures.

Investigate current trends in ceramics,
giving particular attention to con-
temporary ceramists.

Materials and Tools

clay
plaster (molder's)
glass
glaze
oilcloth or canvas to work clay on
orange sticks or wood slivers (sanded)
for temporary storage -- large rust proof cans
with lids, or plastic pails with lids
plastic bags
plaster bats
plaster humps, to form bowls
water-cups
seeds--for texture
pine cones, ripe fieldcorn ears, popcorn ears,
seed pods, bark
wheels and stamps made of clay and fired

sponges
whittled wooden tools or commercial
wooden ceramic tools
fettling knives
filed designs on nail heads
hand, foot, or power wheels
kiln, with pyrometer or pyrometric
cones
sgraffito tools
flexible scrapers
rolling pins
engobes
glazes
underglaze and overglaze colors
wax
brushes

CLAY PREPARATION

Dry Clay

Clay may be purchased in either the dry powdered or the moist form from commercial firms. The dry form is less expensive than the moist form since it contains no water, therefore, transportation costs are lower. The dry clay is packed in five pound plastic bags to which must be added approximately one and one-half pints of water. Remove all the air possible from the bag. Tie the bag with carpet warp or heavy string about two inches from the top of the bag. After the water has been added, and the bag closed in this manner, lay the bag on the table and knead gently with the heels of the palm. Avoid using the fingers to prevent poking holes in the plastic. Knead for about fifteen minutes; check to see if more water is needed. If necessary, add about one-quarter cup, reclose as before, and knead some more. It is preferable to let the clay stand over night, however, it may be worked immediately.



Native Clay

Students may obtain chunks of clay along the roads or streams near their homes. These samples may be soaked, strained, and allowed to settle, the excess water poured off, and the clay allowed to stiffen to a workable consistency.

Since the firing temperature of this clay will not be known, it would be well to prepare only a pound or so. Most native clays work satisfactorily and give an interesting array of colors. Excavations furnish a variety of suitable clays. Such clays fire from pure white through faint flesh tints, light gray, dark gray, reds, orange, to dark maroon.

Wedging

The expansion of air bubbles in clay during firing will cause the ceramic pieces to explode. For this reason, the clay must be wedged.

Take a portion of the clay, about the size of a tennis ball. Hold the clay in the hands and press gently to form it into a ball. Lay the ball on the canvas, and use a piece of thin wire or nylon string to cut the ball in half. Place the two pieces together, press gently, and reform the ball by using only the palms of the hands. Repeat cutting and reforming the ball fifteen to twenty times, or until there are no visible holes in the clay when it is cut. After the last cutting, reform the ball and store in a plastic bag tied tightly and placed in a covered container until ready for use. A number of balls can be prepared and stored in the same bag.

CLAY PROJECTS

Pinch Pots

Select a ball of wedged clay. Place on a small plaster bat or a very heavy cardboard square, six inches by six inches. Place the thumbs, nails together, at the top of the ball, press down gently, meanwhile rotating the ball and the cardboard with the rest of the fingers. Continue to press down with the thumbs, rotate the ball, and enlarge the opening the thumbs are making by pinching on the sides of the ball. If the surface of the clay becomes dry, moisten it with a few drops of water to prevent cracks from forming. If cracks do appear, remove them at once as they will increase in size and spoil the piece. Continue pinching and forming until the walls are about three-eighths inch thick. At this point the piece may be shaped by pressing gently into round, oval, triangular, or irregular shape. Allow the clay to become firm enough to hold its shape but not leather hard. Add a design by pressing gently, but firmly, with a texture tool, seeds, or other textured materials, or by carving with a knife, scratching with a nail, or an orange stick. Dry the piece very slowly. When it is "leather hard," a small "foot" may be scraped on the bottom to make the piece "sit" better and prevent warping. Incise the pupil's name and date on the bottom for identification.



Flop Forms

Prepare a low mound of molder's plaster in the desired shape. Smooth and allow to set. When hard, scrape and sand the shape to a very smooth surface. Allow to become bone dry. When the "flop mold" is ready, select one of the previously wedged balls of clay. Moisten the surface slightly, place on the canvas, and press with the palms of the hands until it is about one inch thick. Use drops of water as needed to prevent cracks from forming. Now lay two flat sticks, one-half inch thick by one and one-half inches wide by eighteen inches long, on either side of the flattened clay, like railroad tracks. Using a rolling pin, gently roll the clay from the center outward until the rolling pin rides on the stick tracks. This assures an even thickness. With a knife cut the desired shape out of the clay, remove the excess clay, and gently invert the clay and canvas on the flop mold. Carefully peel the canvas off the clay allowing the clay to remain on the mold. Slide the clay to the place you want it on the mold and gently smooth the surface. Slip the mold with the clay on it into a large plastic bag and tie tightly. Allow to remain overnight. The next day remove the mold from the bag, take the dish off the mold, and with a slightly moistened finger smooth the inside of the dish. To make the dish stable, scrape a small flat area on the bottom. Turn the dish right side up, checking to see if the dish sits properly. If not, scrape more clay off the bottom. Designs may be incised in the center of the dish, or along the edge after the edge has been evened. Also, colored engobes may be painted on and a design sgraffitoed into the surface. Allow the piece to become bone dry; fire and glaze.



Legs or handles should be attached before the dish is removed from the mold. These can be made from the scraps cut off when shaping the dish. Legs and handles can be kept for several days by wrapping in a damp cloth and storing in a plastic bag. From other scraps mix slip to fasten the legs of handles to the dish.

To make slip, mix water with the clay until it has a creamy consistency. It is important to use the same kind of clay for the dish, legs, and slip to assure the same amount of contraction in the drying and firing, and thus avoid breakage.

When the legs are formed and ready to be put on, they should be fitted to the dish. Move the legs until they are in the desired position. Use a pencil to make a faint line around the leg where it will be joined to the dish. Score the area inside the mark; score the contact area on the leg; apply a big drop of the slip to both the dish and the leg. Put the leg in place, press firmly, and allow the excess slip to remain where it is until it has become leather hard. The slip can then be scraped off and the area smoothed.

Hammock Shapes

Pieces of cloth, burlap, or onion bags can be tacked across the open top of a sturdy cardboard box to form a hammock. The material may be bulged down slightly with the hands. The clay is rolled as for a flop mold, but now the canvas with the clay on it is inverted over the hammock, and the clay lowered onto the hammock. If a melted or textured hammock is used, the clay may be smoothed a little more vigorously so that the pattern of the material is imprinted on the outside of the dish. If texture on the inside is desired, a piece of the same material may be pressed on the surface. The dish is covered lightly and allowed to remain in the hammock overnight. The next day it is removed, the edges finished, the base formed, and the piece is allowed to dry. After the piece has been fired, if a netted bag has been used, a dark glaze may be rubbed into the netting marks and removed from the rest of the dish by wiping. Cover the piece with a clear glaze and fire. Other methods of decoration may also be used.

Coil Forms

Form a base of wedged clay, prepared by rolling out the clay as for a flop dish. Draw a circle on the clay the size of the bottom desired for the ceramic piece. Cut the circle out with a knife and place it on a plaster bat or piece of cardboard. Score the edge of the circle with a knife. Cut a one-half inch strip for the rolled out clay. Roll it lightly on canvas to form a coil. Cut the coil long enough to fit around the base. Cut the end edges at an angle so they will overlap. Score the coil. Add slip to the base. Press the coil into the slip, adding slip to the coil ends, and press gently together. Weld the coil to the base and smooth with the fingers, an orange stick, or ceramic tool. Continue adding coils. Weld the coils as they are added, allowing those already placed to become firm, so the piece will not sag. The dish may be made wider or narrower by either gradually increasing or shortening the length of the coils. Between working periods keep the piece covered entirely with plastic. Also keep the remainder of the rolled out clay covered with a moist cloth and placed in a plastic bag. The slip can be kept in a small jar. When all the coils have been added, smooth with a scraper and remove the plastic for a while each day being sure to cover with the plastic every night. This allows the piece to dry slowly and the moisture to equalize at night and prevents the piece from drying in one spot more than another, which causes it to crack. When the piece begins to look light in color, remove the plastic and allow it to dry at room temperature. If desired, attach a foot to the bottom. Add the student's name and date. Allow the piece to become bone dry. Fire and glaze.

CERAMICS

Slab Pieces

Draw a design on paper. Make the pattern pieces of paper, allowing for proper overlapping. These patterns must be exact!

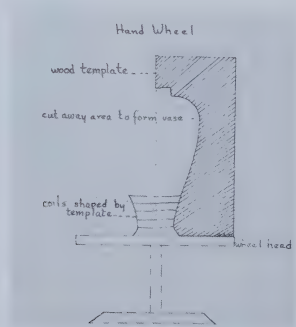
Roll the clay as for flop molds. Place the pattern pieces of the clay, and cut out. Score the overlap areas, add slip, and assemble the piece **one** piece at a time, allowing each piece to become firmly set before adding another. Fuse each joint by pressing firmly. A small coil of clay applied to the inside of the joints will give added strength. Allow the piece to dry slowly. Fire, decorate, glaze.

Hand Wheel

The hand wheel is an iron or aluminum disk mounted on a spindle and is revolved by turning with the hand. The hand wheel is used on a table or other work surface and is very practical for either building or decorating.

Any of the building methods which are described herein will be more easily accomplished on the hand wheel because the work is raised above the table level and can be easily turned by the ceramist without endangering the shape of the piece.

In addition to shaping with the hands a template may be used. To prepare the template, draw the design for the vase on a piece of paper. Divide the design in half lengthwise by drawing a line through the middle. Draw a line from the base of the design to the edge of the paper. Cut the pattern as shown in the diagram.



Place the pattern on one-half inch lumber and transfer the design to the wood. Saw out the shape, the outside of which becomes the template. The width of the top of the template will be one-half the diameter of the wheel head.

Cut a circle the size of the base of the piece and one-quarter inch thick. Place the base in the center of the wheel head. Be certain the clay is centered. Fit the template to the edge of the wheel and to the edge of the base. Turn the wheel while holding the template in place, so that the edge of the base is smoothed and shaped. Apply the coils one at a time, fitting the shape of the piece to the template after each application.

Wheel-Thrown Pottery

Select a ball of wedged clay that is somewhat softer than that used for the other clay pieces. Center it on the wheel, and start rotating the wheel. Wet the hands thoroughly, and lock the thumbs together. Form the hands into a cup. Lower the locked hands over the clay ball until they touch the ball very lightly. Keep wetting and applying the hands to the clay, always with a slight pressure until the clay fits the hands. When the clay fits the hands begin to apply a little pressure and squeeze the hands together slightly. Release. Apply more water and squeeze again, forcing the clay up into a cone. When a cone has been formed, place the right hand on the top of the cone and the left hand on the left side of the cone, supporting the right hand with the left hand. Begin to press down with the right hand, while the left hand helps control the side of the cone. Release. Wet the cone, continuing to apply pressure in this manner until the cone is reduced to a short column. Again raise the clay to a cone, and again reduce it to a column. Do this at least three times or more if the clay shows any tendency to lean. The clay must be perfectly centered before you can proceed.

When the clay is centered, reduce it to a column for the last time. Place the nails of the thumbs together; begin to press down in the center of the clay, keeping the other fingers around the outside of the clay to control the shape. When the thumbs have made a hole to within one inch of the bottom, they may be pulled apart slightly, enlarging the center hole. Now the left hand may be inserted into the hole, and the right hand can be placed on the outside. Work the middle finger of the left hand from the center of the bottom toward the right wall, until the left middle finger and the right middle finger are opposite each other. With gentle pressure draw both fingers upwards, with even tension on each side of the wall, until they come together at the top. Wet the hands and continue raising the wall slightly each time, until a column the desired height and thickness is obtained. Now the piece can be widened at the lower part by increasing the pressure of the left hand. Higher on the vase the neck may be made smaller by increasing the pressure of the right hand. The lip at the top may be formed by holding the thumb and first finger of each hand together to smooth it.

Allow the piece to remain on the wheel overnight covered by an inverted tin can or plastic bag. If the piece must be removed from the wheel immediately, it may be formed on a plaster bat which has been fastened to the wheel with three one-inch clay balls called

"keys." By the next day when the piece is firm enough it can be cut off the wheel by drawing a thin wire across the base of the piece. Allow the piece to dry until leather hard.

Invert the bowl or vase on a potter's wheel -- center it exactly. Fasten it in place by using clay keys. Take the stirrup-shaped, foot-cutting tool and as the wheel turns trim off the excess at the edge of the bottom, gradually trimming it until it is at least one-half inch in from the side. Begin to even the bottom surface starting from the center and removing a continuous strip out to the edge. Repeat until the bottom is even. Next, holding the tool so the edge of the stirrup acts as a knife, make a cut three-eighths inch from the edge. Beginning with this cut, and holding the tool at a slight angle, but still almost flat, tool out a thin ribbon of clay as you move the tool to the center of the bottom, raising the tool as you approach the center. Repeat until the foot has been cut down one-quarter inch at the place where the cut was made at the outside. The center of this bottom area should be one-eighth inch higher than the sides. Smooth and incise the student's name and date in this area.

Clay Decoration

Greenware, while it is still leather hard, and **before it becomes dry**, may be decorated with colored slip, painted with underglaze, painted with soluble salts, incised or tooled, or it may have clay designs applied to its surface using slip to hold them. The drying process then proceeds slowly.

Bisque ware may be decorated with underglaze, matt or gloss glazes, overglaze, tin oxide designs painted on a red clay and a clear glaze added overall, soluble salts painted on the bisque and the glaze applied over the salts, or the glaze applied first and the soluble salts carefully applied over the unfired glaze. Designs can be painted on the bisque with wax. The glaze is applied over the entire surface. In firing the glaze pulls away from the wax area, allowing the bisque to show. The glaze may be applied and various lengths of string soaked in glaze of a different color may be arranged in designs on the surface. The string fires out and the glaze trails remain.



The glaze may be applied and pieces of broken glass may be laid over the glaze in a mosaic effect. The glaze melts and fuses with the glass giving the appearance of jewels sprinkled over the surface. On bisque bowls or vases a free flowing glaze may be put on first, and a slow flowing glaze sprayed over it. When fired, the runny glaze comes through the over glaze in places.

Slip Decorating

Slip may be used to decorate greenware. While the clay is still moist, the slip may be washed over the inside or outside of the piece. As soon as it has set, designs may be carved or scratched into it allowing the body to show through. This method is called sgraffito. The slip may be painted on with a brush, squeezed out of a plastic bottle in the manner of cake decorating, or sprayed on with an air gun.

Underglaze colors may be obtained from ceramic supply houses. The underglaze colors are applied with a brush and must be covered with a clear glaze after firing.

Overglaze or china painting is applied to pieces that have already been fired and glazed. The overglaze is applied and the piece is fired at a much lower temperature than was used for the original glaze. Because of the lower temperature the colors are more brilliant. Gold and platinum are available in overglaze.

Glazing

Glazes may be purchased in a powdered form to which water must be added, or in a moist form. There are glossy and matt glazes. Firing directions are given on the packages.

Glazes should be kept in tightly closed well labeled jars.

Glazes should be stirred before using and thinned with water if they become too thick.

Wipe pottery with a damp sponge before glazing.

Glaze may be poured into the ceramic piece to be fired and the excess glaze returned to the jar. Glaze may be daubed on the outside of the piece with a soft brush to a depth of one-sixteenth inch. The glaze should be applied more thinly near the bottom since the glaze tends to run down. All glaze should be removed from the under side of the piece with a damp sponge.

The glaze may be poured over smaller pieces, or they may be dipped into the glaze. Be sure all glaze is removed from the under side.

When a sprayer is used, the spraying should be done in a spray booth equipped with a vent fan. Also a gauze mask should be worn for added protection because some glaze ingredients have an irritating effect.



FIRING PROCESSES

Bisque Firing

Paint the shelves and floor of the kiln with kiln wash. Remove old glaze drips with a chisel and mallet. The greenware must be bone dry before firing. Stack the pieces, the largest at the bottom. Set the pyrometric cones where they can be seen from the peephole. Use three cones, two of which have a lower melting temperature than the cone to which you are firing. This gives you ample warning against over firing.

Heat the kiln slowly to evaporate any moisture. Fire to the temperature recommended for the type of clay following the directions given by the kiln manufacturer.

Turn off the kiln when the correct temperature is reached.

Let the kiln cool twelve hours, and remove the bisque when it is cool.

Glaze Firing

Apply the liquid glaze mixture to the bisque ware, letting it dry thoroughly. In placing the glazed pieces in the kiln, care must be taken to keep the pieces at least a finger's width apart to allow for expansion of the pieces in the firing. Each piece should also be placed on a stilt so it will not stick to the shelf, and the pieces so arranged that glaze does not drip down onto the pieces on the shelf below. Place the pyrometric cones in line with the peephole so they are clearly visible. Check carefully as soon as the warning cones begin to melt. Turn off the kiln when the cone indicates the correct temperature. Overfiring at this time can be disastrous, since the glaze will become so fluid that it might all run off the piece. Close the drafts and allow the kiln to cool twelve to eighteen hours before removing the pieces. A piece that does not turn out well on the first firing may be reglazed and fired again. In this way a good piece that has had some glazing mishap may be saved.

Chip carving is a technique for surface decoration on wood, and most of its beauty lies in the interplay of light and shadow formed by the geometric cuts. It is a unit design or an arrangement of small triangular shapes, squares, and diamonds cut into the surface of the wood. The term, "chip," describes the angular piece which is removed to form the carving. The triangular cuts are repeated in various combinations to achieve an interesting precision-cut design.

Desired Attainments

The student will have gained from this experience if he has learned to

- plan a design which will be suitable and harmonious to the finished product
- develop skill in the use of the cutting tool in relation to the material used
- appreciate the beauty and the possibilities of the material.

Suggested Activities

Decorate any wooden surface such as

- plates
- bookends
- boxes
- plaques
- buttons
- furniture
- trays



Chip Carving

Make some practice cuts first on soft wood to get the feel of carving. Bass wood is ideal for the beginner. Draw some small triangles on the wood. The basic cut is made by inserting the cutting blade at an angle and pushing the blade into the center of the triangle. After cutting all three sides of the triangle, remove the chip. If it does not come out easily, retrace the cuts with the blade and release the chip. The beginner will find it easier to make shallow cuts that are quite effective, although shadows are more pronounced in deeper cuts. A sharp blade is essential to produce clean cuts.

Alternate method: Draw a triangle with a dot in the center. Place the point of the blade on this dot and cut straight down until the blade reaches the corner of the triangle. Repeat this to the other two corners. Then make a slanting cut inward from each side of the triangle to the center. Take several slices if necessary to have the correct slope and depth.

After practicing the basic cuts, it will be found that with some experimentation and planning, a simple design can be achieved in various ways depending on the way it is cut.

Plan your individual design on paper to fit the space to be used making sure it is marked into units for cutting. It is now ready for tracing on the wood itself and for carving.

After carving, sand the entire piece lightly, but do not sand the sharp edges of the carving, as a sharp, well defined edge is to be desired. Stain or color, if desired, and give a protective finish of wax or varnish to finish the piece. Waxing the natural wood makes a fine finish for chip carved objects.



Materials and Tools

- pencil
- stiff-back razor blade or carving knife
- #00 sandpaper
- suitable wood
- stain
- wax
- varnish

Collage is a French expression meaning to paste. It is the making of a design or a picture by the arrangement of different materials on a flat surface stressing good relationships and contrasts of the elements. In this technique, art principles may be thoroughly explored with a great deal of freedom. Shapes, colors, and textures of materials may suggest an approach to a theme or a nonobjective design.

Braque is generally credited with having first used extraneous materials in combination with his painting. Picasso, Leger, and others of the cubist movement employed this technique by developing entire composition with these materials.

Desired Attainments

- Making a collage is a worthwhile experience for the students if they develop
 - a feeling for beauty in commonplace things
 - an awareness of design
 - the observation of different textures, both visual and tactile.

Suggested Activities

Learn to recognize various textures and relate them to commonplace objects.

Make collage

- abstract designs
 - use unlimited materials with varied textures or colors
 - use limited materials within a range of texture or color



pictorial illustration

a definite theme to express emotions

a landscape

an animal picture

a composition of human activities

portraits

cartoons

Materials and Tools

scissors and pinking sheers

Paste and brushes

staplers, standard and long neck

pins

poster boards

wire cutters

tin snips

miscellaneous materials as found in the

list of native and discarded materials

When you think of flowers, you think of beauty. Beauty is a necessity in all our lives, and flowers have a means of satisfying that desire. They add beauty to the world around them through their wealth of colors, variety of shapes, and variance of fragrances. An attractive, suitable floral arrangement completes a luncheon or dinner table, accents a color scheme in the living room, and highlights its surroundings. Not only do floral arrangements mean enjoyment for the viewers, but they also provide hours of relaxation and fun for the arranger.



Desired Attainments

Effective floral arrangements can be achieved when the student has learned to

- recognize basic shapes and color of flowers

- experiment to develop an individual style of arrangement

- plan suitable arrangements for various occasions

- use garden flowers or roadside blooms for decoration

- use dried flowers, seed pods, grasses, and branches.



Floral Arrangements

Suggested Activities

Learn to know and use the basic tools and arrangement designs.

Collect various types of containers.

Combine line and form flowers for contrast, avoiding extremes in size.

Select flowers that could be used to make various color harmony combinations.

Study various types of arrangements, including Japanese.

Materials and Tools

a sharp paring knife for cutting stems

shears for heavy stems and wire

floral wire for holding flowers to shape

florist tape for winding stems

containers -- short, tall, fat, thin; glass, or ceramic

holders -- needlepoint, crushed chicken wire, shredded styrofoam, or solid water (oasis)

flowers -- line or spike -- gladioli, snapdragons, and delphiniums

form -- carnations, chrysanthemums, roses, and asters

filler -- baby's breath, ageratum, and pompons

accessories -- driftwood, shells, netting, candles, ceramic forms



Stained Glass

The art of using stained glass for windows is an old craft which attained supreme artistic beauty in the Middle Ages in Gothic cathedrals of Western Europe. Through the centuries the beauty and enchantment of light through colored glass has inspired the glass makers craft to be used in various ways. When windows which had been removed for safekeeping during the wars were reinstalled by present day artists, a new enthusiasm for this ancient craft was experienced and viewed in a new light. Since then, contemporary artists have interpreted the material for use in modern architecture and smaller items to be used for the home.

The making of large stained glass windows is a highly developed craft, however, small objects which are creatively designed can be made by the student.

Desired Attainments

Students will have grown through this experience if they have

gained some appreciation of the history of stained glass

developed satisfaction in experimenting with line, form, and color

attained an understanding and appreciation of beautifully handcrafted objects made of colored glass

learned to use new tools

explored the possibilities and respected the limitations of the material in relation to good design

realized and used the knowledge that space and light are an integral part of the design.

Suggested Activities

Use colored glass to make

- medallions
- panels for windows or screens
- parts for a mobile or stabile
- light fixtures
- lamp shades.

Leaded Window

Draw a simple design, or arrange pieces of glass which are already cut on a sheet of paper until a pleasing design is achieved. Glass pieces should be somewhat smaller than the design to allow for lead came.

To cut the glass, place it over the design and draw the glass cutter toward you along the outline. Use light, even pressure and do not retrace the cut. To break, tap the underside of the glass along the line. Remove the loose particles of glass by running the cutter along the edge.

If lead came is used, fit it around the glass until the ends meet and cut the came with a sharp cutter or knife. If a tin or copper strip is used, bend it around the glass to form an edging.

The ends of the came should be secured by soldering. Apply flux to bind the solder to the metal, then solder the joint -- some solder includes the flux. Hold iron or gun on the solder until it spreads evenly. Keep the iron at a heat which will melt the solder, but not the lead.

Assemble all pieces over the paper design, and solder all meeting points on one side of the panel. Turn it over and solder the reverse side. Form the joints carefully for a neat appearance in the finished product.

Planning a design with open spaces will be simpler for the beginner as the necessity for precision cutting and fitting is less.

Materials and Tools

stained or colored glass
lead came -- special "H" channel which is
 used to hold the glass can be
 bought from stained glass studios
copper or tin sheeting for cutting into
 strips and folding around the glass
 edge can be substituted for lead came
glass cutter
soldering iron or gun
solder and flux

Colored Glass Windows Framed in Plaster

Stained glass window effects can be achieved by setting colored glass in plaster of Paris or molding plaster.

Obtain a box of desirable size, strong enough to hold plaster. Shape moist clay to serve as plugs for windows in the setting of the plaster. The shape of the clay may be irregular, round, triangular, or square.

Arrange the plugs, all of equal heights, in a shallow box and lay a piece of colored glass over each plug, allowing the edges of the glass to extend beyond each clay plug at least a quarter of an inch. Place the other half of each plug of clay on the glass so that the walls of the plugs will be continuous. Pour the plaster into the box to the depth of the plugs. After the plaster has set, remove the clay plugs, and the colored glass will appear as a window in the white plaster.

Sagged Glass

Forms for making sagged glass are shallow clay bowls which have been shaped on a flop mold. These bowls should be about three-quarters inch thick, and should be fired at a very low bisque temperature, considerably below the recommended temperature for the clay. The low bisque firing prevents the forms from becoming too brittle when they are used several times. Put the glass in position on the mold which has been painted with kiln wash. Place the glass and mold in the kiln and fire. Thin window glass seems to be the best for this purpose, although broken glasses or bottles can be used. The melting point of glass varies from 1300 degrees - 1500 degrees Fahrenheit. If the melting point of the glass is not known, check frequently via the peephole to see when the glass is cherry red and seems to be fitted to the mold. The kiln may then be turned off.

To add color and texture, place small bits of broken glass or ground enamels between two layers of thin glass held together with a mixture of ground borax, water, and a small amount of gum. Dry thoroughly and fire to make small trays or bowls.



Surface decoration can be applied to glass through the process of etching. Etching can be safely simulated by using a commercially prepared etching compound that is non-toxic. The etched areas will appear as frosted surfaces in contrast to the clear glass of the non-etched areas. A contrast in texture is thus achieved.



Desired Attainments

The student should be

cognizant of good design quality on glass

appreciative of the art of glass etching

aware of the practical and decorative uses of etched glass.

Suggested Activities

Create a design on paper which will serve the desired purpose. If the design is to be traced several times, cover the pattern with transparent mending tape to ensure its durability.

Wash and dry the glass. Cover the glass with overlapping strips of masking tape. Position the carbon paper and the design, and secure both with tape to prevent slipping. Trace the design accurately with a sharp pencil to transfer the design to the masking tape.

If the design is to be repeated on the same piece of glass, align, and retrace. If the design is applied to the sides of a goblet, sherbet, or bowl, the design will be more effective if the circumference of the glass is divided in uneven rather than even sections.

Using a sharp cutting tool or single edge razor blade, cut the design out of the masking tape thus forming a stencil. Take precaution not to cut the glass. Work back over the cut edges of masking tape smoothing the rough edges with the thumb nail.

Apply commercially prepared etching acid to the openings of the design and let stand fifteen or twenty minutes. Rinse the acid from the glass with clear water. Remove the masking strips; wash and dry the glass.

Alternate Methods

(1) Dip glass in wax. Apply design with tape. With a sharp instrument, cut out the stencil and remove wax.

(2) Block out the background of the design with fingernail polish. Transfer the design to kraft gummed tape or any gummed paper; adhere to the glass. With a stencil knife or razor blade cut away the background of the design. Apply the nail polish over the design and glass. Allow to dry thoroughly. Pull off the kraft paper design areas. Apply the etching medium as described in the other methods.

Materials and Tools

- masking tape
- mending tape
- sharp cutting tool
- glass objects with plain surface
- etching compound

The scope of industrial design is vast. It is the design of products for mass consumption sometimes referred to as appearance and use design. In other words, the field encompasses almost anything that is machine made and mass produced for man's use. Industrial designers are primarily concerned with three aspects: beauty, simplicity, and utility. These aspects are applied to machined products, furnishings and equipment for the home, industry, and commerce. The so-called "eternal problems" concerning the industrial designer are food, clothing, shelter, communication, and transportation -- their mass production and consumption.

Industrial design may be said to have had its earliest beginnings with the Industrial Revolution in England and the Crystal Palace built by Joseph Paxton in 1851 for the London International Exposition. The depression of the 20's gave industrial design its foothold in this country because manufacturers believed management's solution to its major problems was to employ more salesmen and produce more products. Pioneer industrial designers such as Henry Dreyfus, Walter Dorwin Teague, Harold Van Doren, and others helped to coordinate the various aspects of engineering, sales, management, and consumer. These men showed industry a new approach to product development which would increase its sales; they convinced management that they could interpret the needs and desires of the consumer. Secondly, they persuaded management that the visual acceptance of their products would go a long way in helping them to regain their lost markets. The idea caught on and in just one generation industrial design has evolved into an exacting profession that serves both large and small industry.

The profession of industrial design demands knowledge in many related fields. Industrial designers often must be prepared to measure public taste, understand production problems, comprehend financial requirements, talk business at an executive level with clients, be salesmen, diplomats, psychologists, and be able to work intelligently with engineers. To create design for the future, the industrial designer must be well grounded in the history of art and architecture. Industrial designers are frequently called upon to work with all of a company's physical aspects and properties. They may be contracted to coordinate a company's public image and create product identification by designing trademarks, packaging, signs, offices, shops, trucks, stationery, office forms, and even uniforms of employees.

Students interested in careers in industrial design should possess certain aptitudes in order to succeed in this field. In addition to an artistic aptitude, they should be highly intelligent in conceptual and abstract thinking. They should also be mechanical, analytical, and methodical in their approach to solving problems and interested in how things are constructed. They should like and be interested in people since they would be designing products for their use.

Industrial Design

Desired Attainments

Students will gain some knowledge and appreciation of industrial design if they are aware of the evolution of appearance and use design

realize the extent of intelligence, artistic aptitude, patience, and preciseness demanded by the profession

respect the honest use of materials, exploring and exploiting their inherent qualities, and observing their limitations

enjoy manipulating materials into forms of visual beauty irrespective of their functional application

learn methods by which relatively weak and common materials may be increased in structural strength and beauty

work persistently, methodically, and with craftsmanship toward the solution of their design problems

are developing an awareness of the myriads of designs -- colors, textures, and forms that surround them

become more design conscious in the evaluation and selection of products
develop ideas from materials that might have practical application.



Suggested Activities

Because industrial design is such a broad field, demanding years of extensive training and experience, the high school art student should realize that he can do little more than to get acquainted with the field and develop a degree of empathy with the industrial designer and his problems. This may be achieved, to some extent, by learning something of its history and designers, exploring materials, and after some groundwork, attempting to design or redesign a product. Many experiences are listed here. Teachers and students should select experiences depending on the amount of time, facilities available, and emphasis to be given the subject.

Introductory

Learn something of the early schools of industrial design such as, the Bauhaus (1919-1928) of Weimar, and later Dessau and Berlin, Germany, and the Chicago Institute of Design. Become familiar with some of their students and teachers, among whom are Walter Gropius, Laszlo Moholy-Nagy, Paul Klee, Wassily Kandinsky, and Lyonel Feininger.

Have individual students, or groups, select a product such as a washing machine, chair, clock, telephone, automobile, airplane, toaster, radio, and trace its evolution in design from its origin to present day. Make an illustrated chart with photographs and/or sketches of the product's changes. Label with explanatory copy, discuss and analyze. Examples of products may be found in books, encyclopedias, old catalogs, magazines, and newspapers.

Learn about a few major industrial designers such as Henry Dreyfus, Harold Van Doren, Raymond Loewy, and others.

Make a study of new ways these and other materials are being used in today's products:

ceramics	glass
laminated wood	foam rubber
plastics	concrete
aluminum	synthetic fibers
paper	cardboard.

Investigate materials being developed for man's use in the future.

With emphasis upon imagination and manipulation, experiment with composition as parts related to the whole.

Planear materials

Make a three-dimensional composition. Manipulate flat sheets, such as details on drafting paper, into a three-dimensional structure by

rolling
bending
folding
cutting

scoring
weaving
corrugating
embossing.

Observe the increase in structural strength and the pleasing forms created.

Make a multiple line drawing in pencil or ink representing a planear material such as a sheet of plastic or paper that has been radically bent or warped into a pleasing three-dimensional form. Attempt to reproduce the drawing into an actual form by bending sheets of plastic, tin, acetate, metal foil, or paper. A substitute method would be to use parallel wires covered and separated by stiff cloth or paper.

Focus a light on the compositions from various angles. Observe the effect light and shadow plays upon the visual sensation of volume and space.

Make drawings of the forms under light. This activity is a good drawing experience for learning how to give the effect of light and shadow using various drawing media such as pencil, chalk, pen and ink, crayon, charcoal, and pen and ink wash. Several forms may be combined in a composition.

Study uses of planear materials in modern industry and architecture, such as the methods of molding, cutting, forming, and stamping aluminum, plastic, concrete, plastic wood and other materials into products, and forms for structures.

Linear materials

Make a three-dimensional composition. Use soda straws, string, dowel sticks, matches, tooth picks, balsam wood strips, and wire to build abstract structures. Relate to the uses industry and architecture made of linear materials in order to beautify and strengthen their forms. Observe the structural arrangements that give greatest strength and performance, yet allow a great deal of diversification in arrangement.

Focus a light upon the structures and make renderings of them.

Mass materials

Design a composition. Using plaster, wood, or clay, carve or model simple hand sculptures that are similarly agreeable to sight and touch. Hand sculptures contribute to the student's understanding of form.

Direct light upon the objects and make drawings of them.

Explore the qualities of different texture and touch sensations -- hot, cold, pricking, soft, rough, and smooth by using various materials such as macaroni, steel wool, metal objects, sand, glass, and burlap. Arrange on wood, masonite, or heavy cardboard.

Light the displays -- observe the visual sensation created by the textures.

Make renderings of the displays to learn techniques of indicating various textures in two dimension.

Practical Application

Design a new shape for some simple product.

Study packages such as boxes and bottles. Evaluate their effectiveness in the functional presentation of the product.

Select a package considered to need improving and redesign it. Relate the lettering to the package and product. Make a mock-up from wood, clay, plaster, or paper.

Select an automobile or a part, such as a dash board, door handle, hood ornament, head, spot, or tail light, to customize or re-design. Consider the form and its function as a basis for tasteful design. Make a rendering and/or model of the new form.

Design handles for tools and utensils that are functional and fit the hand.

Have individuals or groups select a real or fictitious industry and product. Coordinate the design of items that would be concerned with its promotion -- packages, labels, letterheads, signs, displays, uniform badges, newspaper and magazine advertisements. The Junior Achievement Program of some cities would be a source for product promotion on a practical level.

Materials and Tools

T-square
 ruler
 triangle
 drawing ink and pen
 paper -- detail, drafting, oak tag, construction, other
 pencils
 sheets of plastic, tin, acetate, metal foil (36 gauge), other
 scissors
 knife -- pocket, X-acto, single edge razor blade, stencil
 stapler
 cellophane tape
 scoring tool for accurate folding (sewing tracing wheel)
 compass
 model making materials -- plaster of Paris, molding plaster, clay, wood
 resource materials -- magazines, books, slides, catalogs, brochures, newspapers, actual products
 wire -- bailing, aluminum, telephone, stove pipe, other
 watercolor, color inks, or tempera

A liveable home is basic for a satisfactory home life. Interior design is the organization of space and equipment for pleasant living. Home furnishing has four main goals: use, economy, beauty, and individuality.

Desired Attainments

Knowledge of interior design becomes useful when the student recognizes

use -- the central concept in planning and furnishing today's homes, **use** of the object or space determines its form

economy -- the wise use of human, material, and monetary resources, making the best of what you have. Remember that cost is both original and continuing as in the maintenance, upkeep, and expected life of the object

beauty -- the quality which pleases the eye and lifts the spirit. Objects should fulfill their function and express an aesthetic quality. They should be



unified by a basic spirit

be enriched and varied for interest

give a feeling of balance

emphasize the parts in proportion to their importance

give a sense of continuity

individuality -- quality which makes the home different from others; individuality usually comes from the interests and preferences within the family.

Interior Design

Suggested Activities

Draw a floor plan of your room at home as it is.

Draw a floor plan of your room as you would like it, making no basic structural changes.

Consider the best use of space for the basic furniture, for storage, and for activities carried on within the room.

Draw a plan of the family living room as it is.

Draw a new plan, making changes for the best use of space for

furniture -- old and if desired, suggested new

storage

activities of each member of the family

relationship to the other rooms of your home.

Consult reference materials for examples of traditional and modern interiors.

Find examples of traditional, modern, and functional furnishings.

Design a piece of furniture for a specific use, striving for use, beauty, economy, and individuality.

Materials and Tools

pen
ink
watercolors
home furnishing magazine

brushes
paper
pencils

T-square
triangles
rulers

Jewelry satisfies the desire for personal adornment, and metalry affords opportunity to create useful objects. In this area of art expression, the abstract form has always been accepted, and for this reason it is easier for the student to approach this concept of art through the making of jewelry or metal objects. The materials may be expensive or inexpensive as necessity or desire dictates.

Desired Attainments

Students will have achieved a working knowledge of metalry and jewelry if they

use the necessary tools with a comfortable degree of skill

understand the techniques required for working with each metal -- the similarities and differences

respect the tools and use them properly

show a maturing understanding in planning and organizing the necessary procedures for working with metal

show imagination in combining different metals, stones, wood, or various other materials

appreciate design and proper use of jewelry

recognize the art quality in jewelry of other cultures -- ancient or contemporary.



Suggested Activities

Clay

pendants, earrings, brooches, cuff links

Coconut shells

pendants, necklaces, earrings, cuff links, brooches, bracelets

Plastic scraps

pendants, necklaces, earrings, cuff links, brooches, bracelets

Wood

carved earrings, beads, cuff links, pendants

Jewelry and Metalry

Copper

earrings, pendants, brooches, cuff links, bracelets, tie clips of metal or combined with wood, stones, or shell. The surface may be left plain or hammered; it may be antiqued or enameled.

Silver

simple jewelry forms but omit the enameling and add rings and pierced pieces, also wire and sheet forms and molten pieces.

Materials and Tools

clay
coconut shells
wood
plastic scrap
mollusc shells
copper-sheet, wire
brass-sheet, wire
aluminum sheet
jewelry findings
enameling tongs and supplies
brushes, soft bristle, No. 2, 7
asphaltum paint
carbon paper
household cement
diagonal cutter
coping saw and blades
fluting jig
files, assistant and Swiss needle
hammers, steel forming, planishing, ball-pein
emery paper and cloth
etching acids, nitric for copper, brass, silver muriatic for aluminum
ring holder
sparex No. 2 used instead of sulphuric acid for cleaning metals after heating them
pyrex dishes with lids to hold etching acids and sparex
heavy iron pipe, 4 inches long, for forming bracelets
copper tongs
one-half inch asbestos sheet

jig saw, small
enamels
enameling kiln
mandrel
pliers, round nose, needle nose, flat nose
maple hammers
metal shears
tin snips, small curved
steel block, burnished
scotch stone
"C" clamps
iron wire
iron ring stand
scriber
steel wool, fine
hot plate, gas, electric
curved burnisher
charcoal blocks
manganese block
jeweler's saw, anvil
pumice
yellow ochre
maple molds
solders, soft, hard and proper flux
torch, propane or gas
buffing compounds, tripoli, diamond rouge, emery paste
V notch bench pin
iron screen, heavy
vise
rubber cement
mallets--wood, rawhide, horn
forceps--small, curved

Materials and Tools (cont.)

small plastic boxes to hold findings, solders, scraps, stones

wood panels with tool silhouettes painted on it so tools can be returned to their proper place for easy checking

small plastic rulers, markings including tenths, twelfths, thirty-seconds of an inch

Methods--Jewelry

Clay

For sources and preparation see section on Ceramics.

Roll prepared clay balls to one-eighth inch thickness, then cut out a variety of shapes from it. These shapes may be left flat or may be twisted. Those left flat may be carved or filigreed, or may have raised motifs added, fastened securely by slip. Strips of clay may be rolled into coils and these coils formed into shapes. Pieces intended for pendants or necklaces will require small holes which must be carefully made to prevent cracks from forming. When the pieces are dry, fine steel wool can be used to give them the necessary finish. When thoroughly dry, fire and glaze. Great care must be taken in the glaze firing to prevent sticking. Set jewelry on small points, or build small points on the shelf by piling up drops of kiln wash one on top of the other until a little mound is made. Make several mounds for the larger pieces.

Coconut shells

Students can bring coconut shells when they are in season. Saw the desired shape from the shell with a coping saw or small jig saw. Remove the rough outside with a rasp or file, then file the design and do any other shaping necessary. Smooth with fine sandpaper or fine steel wool, then buff on a wheel.

Plastic scraps

Plastic scraps may be obtained from a sign maker or purchased in sheet form. It is easily sawed or filed to any desired shape. It may also be drilled. Colorants for plastic are available and are easily applied to give a transparent color effect.

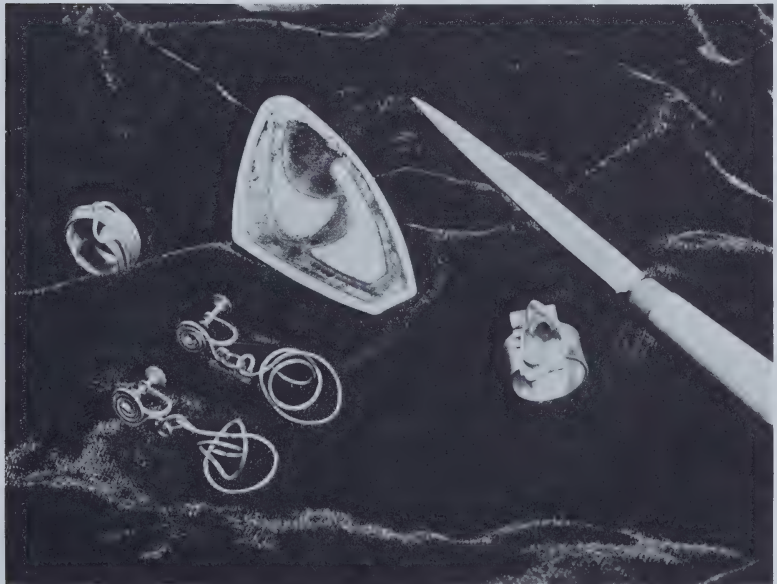
Wood

Many kinds of wood are suitable for jewelry, and may be cut, sanded, and carved into various shapes. It can then be stained, varnished, or waxed. Wood is very attractive combined with silver or copper. All of the above types of jewelry can be mounted on the proper type of finding with jeweler's cement or plastic glue.

Metals--silver, copper, brass

Eighteen gauge silver, copper, or brass are suitable for making jewelry. Draw the design on paper exactly the size desired, cut it out and fasten it to the metal with rubber cement. Place the design as close to the edge as possible to avoid waste. Carefully saw out the piece with a jeweler's saw. Remove the paper pattern, file the edges smooth, rub with fine emery cloth, then buff with tripoli, then diamond, then rouge.

For a hammered surface use a polished ballpeen, or planishing hammer, being sure that it is buffed until it is mirror smooth. The piece to be hammered is held flat on a steel block, and hammered by allowing the hammer to fall by its own weight on to the metal. DO NOT STRIKE! The weight of the hammer alone is enough to mark the surface--more weight will distort the metal and bend it out of shape. Work around the edge first, allowing the marks to overlap slightly, then gradually spiral the marks toward the center. Careful overlapping and spiralling prevents warping. Check for missed areas and hammer them, then buff the piece again. Solder the appropriate finding to the piece with either hard or soft solder, depending on the amount of strain that will be put upon it.





Soldering

Findings may be attached to jewelry by a process called soldering. In this process the areas on both pieces that are to be joined must be very clean and free from grease. The flux is painted on both of these areas and the areas placed together immediately. The solder is placed along the crack where the pieces join, and when the flux is dry the heat is applied. Soft solder does not require as much heat as hard solder so a soldering iron can supply the heat. For hard solder a torch must be used. In using a torch apply the heat to the block around the object, then gradually bring the flame close to the piece. As soon as the solder melts remove the heat and using copper tongs lift the piece and place it in the sparex. Allow it to remain there a little while to remove the darkened spots caused by the flame. Then remove from the solution, rinse, dry, and buff.

When using soft solder, a small wood burning tool gives sufficient heat to melt the solder and cause it to fasten the finding securely. Soft solder is used when a low temperature is necessary, as in applying findings to enameled pieces, or for convenience where an extremely durable joint is not necessary, where the joint would not be in view. Hard silver solder, is used where the joint must stand strain, or where the jointing would show, or where several successive layers are joined.

When using hard solder, clean the surface to be joined by using acid, or rub with a very fine emery cloth, then paint the areas to be joined with a liquid flux, immediately settling them in place. Now snip very tiny pieces of hard solder, and piece by piece lay it close to the edge of the finding. Place pieces of solder all around the edge of the finding, almost touching each other. Allow the flux to dry, otherwise the steam from the flux makes the solder hop off when the heat is applied. If possible set the piece to be soldered on the charcoal block before placing the bits of solder in position, thus avoiding the possibility of shaking them out of position.

When dry, carefully play the flame on the block first, then move toward the piece, avoid allowing the flame to touch the solder. The heat will be carried to the solder by the metal. As soon as the solder melts and runs, remove the heat. Lift the piece with copper tongs and place in the sparex or sulphuric acid solution. Sparex is less dangerous for students to use. Allow the piece to remain in the solution a few minutes until it is bright, remove it, rinse, dry, rub with pumice using the moistened fingers, rinse again and dry. Now the piece can be buffed on the wheel using diamond, then rouge, washing and drying the piece between each buffing.

Antiquing

If light and dark areas are desired, immerse the piece in a solution of liver of sulphur until it becomes steel blue. Remove from the solution, rinse, dry and buff lightly with diamond then rouge. This gives a two-tone effect.

Annealing

If either copper or silver becomes difficult to bend, heat it with the torch until it becomes red, lift with tongs and plunge it into sparex. This restores its malleability and is called "annealing."

Projects in Silver

Wire Pin

This pin is to be made of one continuous piece of wire; soldering is unnecessary. Draw the design and with a piece of string follow the lines of the design to determine the amount of wire necessary, add one-half inch for a hook and a length long enough to reach from one side to the other for the tongs, plus another half inch for a spring which is placed at the point where the design ends and the tong begins. Using round-nose pliers, cause the wire to follow the design allowing for the hook at the beginning. When the design is completed, coil the wire around one of the jaws of the round-nosed pliers once to make a small circle which is the spring, continue the wire across the pin to complete the tong, so that the free end lies across the hook. Sharpen this end and smooth it so that it will enter the fabric easily. Close the catch and polish the piece by buffing. Wire pieces are enhanced with an antique finish. See previous directions.

Pierced Piece

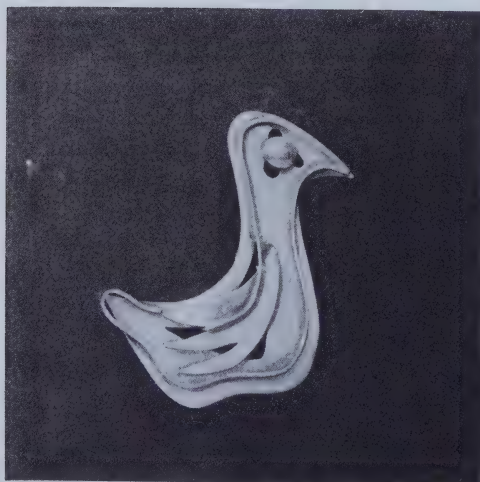
Pierced pieces are made by sawing out pieces of the design with a jeweler's saw. Draw the design on a piece of tracing paper. Attach this design to eighteen gauge metal with rubber cement. Using the center punch mark a spot in the area to be sawed out. Using a small hand drill set the bit in this punch mark and drill a hole completely through the metal. Insert the blade of a jeweler's saw in this hole and fasten the blade in the saw frame while it is still threaded through the hole. Saw out the piece to be removed, loosen the blade, remove from this hole and repeat for each hole desired in the design. When all the holes have been made in the design saw around the outside. All sawed edges should be filed smooth with needle files and finished with emery cloth.

A beveled edge can be filed on the various edges to add to the design quality. All bevels should be smoothed and buffed. Holes for pendants can be made in the same way as those for sawing interior holes and jump rings placed in the holes. If the piece is to be a pin, the pin findings can be soldered in place. The piece may be antiqued or left bright and in either case finished by buffing.

Ring

Silver for rings may be purchased in strips one-quarter inch wide, sixteen gauge and as long as needed. Measure the finger with a strip of paper one-quarter inch wide. Wrap the paper around the finger and cut it where the paper overlaps. Use this piece for the pattern size for the ring. Cut the silver strip with a jeweler's saw so as to avoid distorting the strip. Cutting with tin snips will distort the edge. Bevel a small amount off the edges that are to come together, from the inside to the outside. This bend must be very small but it does make the ring fit better.

With a wooden mallet, hammer the strip over a rod or ring mandrel, beginning with one end and continue forming the ring until the other end is reached. If the ring has not closed in enough the first time, repeat again until the ends are about one-eighth inch apart. The edges can now be painted with flux and drawn together until they touch. This is most easily done by wrapping a piece of iron wire around the ring and then twisting the wire until the band is drawn together. Apply more flux to the inside of the seam and lay small pieces of solder along the inside of the crack. They should be close enough to almost touch. Putting the solder on the inside only, avoids solder spots on the outside. Since the flux has been painted on the edges that touch, the solder will draw through to the top surface and so fasten the outer edges also. Allow the flux to dry so that the heat of the torch will not cause the flux to steam and throw the solder away from the crack. When the heat is applied, move the flame gently around the area to be soldered. Avoid overheating the silver in any one spot. Gradually bring the flame close to the joint, moving it around the joint until the solder flows. Remove the heat at once, lift the ring with copper tongs and drop it into the pickle.* Rinse, remove the wire, clean with pumice, buff with tripoli, diamond, and rouge.



* See page 173

Sheet on Sheet

Draw a design that will require one sheet to be soldered on top of another. File and finish edges and surface, buffing and polishing each piece as for a finished piece. Mark the areas that are to overlap. On the top sheet clean the area that is to touch the bottom sheet using fine emery cloth, then paint this area with flux. Invert this top piece on the charcoal block and lay small bits of hard solder on the area that has the flux painted on it. Use flux to make them adhere. Allow to dry.

Heat the block and then the piece until the solder begins to melt. Remove the heat and plunge the piece into the pickle, remove, rinse clean with pumice. Now paint the flux on the bottom piece where the top sheet will cover it, and while it is still wet put more flux on the top piece and quickly place both pieces together the way they are to be soldered. If the pieces are large it would be well to clamp them together, but if they are small the flux alone will hold them. Allow to dry, then apply the heat gently, moving the flame around continuously and increasing the heat as the piece warms up. When the pieces are red they will move together as the solder flows. Remove heat, drop in pickle, remove, rinse, clean with pumice and buff with tripoli, diamond, and rouge. Attach the appropriate findings.

Sheet and Wire

Draw design combining sheet and wire of one or more thicknesses. Prepare sheet as in Sheet on Sheet. Prepare wire by forming it to the shape called for in the design with all ends rounded or finished; then lay it on the sheet in the proper place. With a small brush, place the flux at the places where the wire touches the sheet. Place small pieces of solder at one-eighth inch intervals along the crack where the wire touches the sheet. Do this on both sides of wire, arranging them so they alternate from side to side.

Extreme care must be taken in applying the heat because the wire heats up much faster than the sheet, and it will melt completely if proper care is not used. Heat as slowly as possible applying the heat to the block and the sheet, and to the wire as little as possible. As soon as the solder flows and catches the wire, remove the heat, plunge the piece in the pickle, remove; rinse, and clean with pumice, rinse, dry, and buff. In buffing use care so that the wire is not distorted by the buffs.

Scrap Abstracts

Scrap abstracts can be made by placing a rather large scrap of sheet on a solder block, then laying another on top of it, first painting the area of contact with flux. Continue doing this, adding to the right, left, or top until a pleasing form is assembled. A few bits of hard solder are now tucked in around the pile and allowed to dry. The flame is played around the edges of the block and gradually moved in to the mass. The hot charcoal block carries the heat to the center of the mass. Now increase the heat, playing the flame over the entire mass and allowing it to melt some of the scraps slightly. When the desired effect is obtained, remove the heat, drop the piece in the pickle, remove, rinse, dry, and buff. Antiquing the piece does much to improve the appearance.

Bezel Setting

Design a piece utilizing a cabachon stone. Place a very fine annealed iron wire around the perimeter of the stone at the base. Twist until the wire fits exactly but is not stretched. Slip the wire off the stone, snip the wire on the side opposite from the twist, opening the wires out so that the two arms form the top of the T with the twist as a stem. Measure the bezel strip with the top of the T, add one-sixteenth inch. Now bend the bezel strip around the stone and adjust the fit. It is better to have the bezel a little loose on the stone rather than have it bind. Remove the bezel from the stone and put an iron wire around it to hold it in shape, as in making a ring.

Apply flux and solder the same as in making a ring. Solder, pickle, rinse, and smooth with fine emery cloth. Fit the bezel on the stone, stretching it if necessary. Place the bezel at the desired place on the platform or piece to which it is to be soldered; paint flux on the place where the bezel touches the platform; paint a small amount of yellow ochre on the place where the bezel was joined together. This protects it from the heat when the second soldering is done so the place will not unsolder. Now place the bezel on the site where the flux has been painted and lay bits of hard solder on the inside of the bezel, almost touching each other. Allow the flux to dry. Apply heat until the solder flows. Since the bezel is thinner than the platform, heat the platform rather than the bezel as the bezel will draw heat from the platform. After the solder has flowed, remove the heat, pickle the piece, rinse dry and rub with pumice.

Before trying the stone in the bezel, take a hand drill and drill a small hole in the center of the area enclosed by the bezel. This hole allows you to poke the stone up out of the bezel in case you need to remove it for some reason. Try the stone in the bezel. If it fits well, take the curved burnisher and carefully push the top edge of the bezel toward the stone. Continue molding the bezel around the stone until the stone is snug. If sufficient buffing was done when the metal was prepared, the piece needs only to be buffed with diamond and rouge, then antiqued, and re-buffed, and the piece is finished.

Enameling

Enameling may be done on silver or copper, but copper is more practical. Since the melting point of sterling is too close to the temperature at which enamels fuse, fine silver must be used, and for student work this is too expensive. Copper works nicely and is less expensive.

Simple enameling

1. Clean a copper form either plain or planished. Counterenamel the back by painting with lavender oil, or baby oil. Sift powdered enamel over this oil. While firing, clean the front. Apply oil and sift enamel in designs. Several coats of enamel fired one over the other may be needed to make a nice piece. The piece should be pickled, rinsed, and dried between each coat of enamel.

2. Wet inlay or the laying of the enamel by moistening the powdered enamel and then using a small brush to lift the enamel and putting it in place gives better results design-wise than simply sifting the enamel on.

3. Champleve -- (level fields) In this method the enamel is laid in hollowed-out areas, and there is none on the raised metal areas. Metal of at least eighteen gauge should be used. After the piece of metal has been formed to the desired shape, clean it thoroughly with alcohol and wipe dry, taking care not to get fingerprints on it. Cover the back and edges with asphaltum paint, allow it to dry, prick any air bubbles that may have formed, and refill them with the paint. Allow to dry thoroughly.

Place the prepared piece in the etching solution made of one part nitric acid poured into two parts water. **Always pour the acid into the water, never the reverse!** Use a pyrex dish with a lid because the mixture becomes hot and gives off fumes. The container should be moved around slightly so the acid moves over the piece to effect more uniform etching, but great care must be taken not to slosh the acid out of the dish. Keep water and baking soda at hand when etching and apply a paste made of water and baking soda to any areas where spills have occurred. Do this immediately. Continue etching until the etched area is about one-thirty-second inch deep. Lift the piece out of the solution with copper tongs, rinse in water and dry.



Enameling (Cont.)

Remove the asphaltum with turpentine, rub until all is removed. Pickle the piece in a sulfuric acid bath. Put nine parts water into a pyrex dish and add one part sulfuric acid to the water in the dish. Place the piece in this solution and move it around to facilitate cleaning, lift it out with copper tongs, rinse, and dry. Fill the etched areas with clear flux to prevent firescale from forming; fire, pickle, rinse, and dry. Now add the colored enamel over the flux; fire, pickle, rinse, and dry. Add successive coats of enamel until the enamel is slightly above the metal. Lap on the wheel until it is level with the metal. If the enamel looks dull, clean the piece in the pickle again, dry and fire just enough to restore the gloss, pickle again, rinse, dry, and polish.

4. Cloisonne - (enclosed fields) A design is made by bending a copper or silver wire in any desired shape

- a. This wire, usually round, is soldered to a backing. The wire now acts as a fence, and different colored enamels may be wet-inlaid on either side of the fences.
- b. Thin silver wire that is flat is set on edge to form the design. This wire is set directly on the silver and the dry flux is sifted over and around the wire to at least one half the height of the wire. The piece must be moved carefully since the wire is not soldered down. Heat the flux until it fuses; cool. The wire is now held firmly and colored enamels can be wet-inlaid to give the desired effect. Dry and fire. Continue adding enamel until it is level with the top of the wire.

5. Filigree -- (pierced metal) Filigree is a design made by sawing a very thin sheet of copper into a filigreed pattern. This piece is then soldered on to a copper backing. The piece is cleaned in pickle, rinsed, and dried. Clear flux is placed in the areas that are sawed out. Fire, pickle, and rinse the flux, then add the colors and fire, pickle, rinse, dry, and polish.

Metal Bowls

1. Sandbag Method

Sandbags made of heavy denim, using several thicknesses, and filled with builder's sand can be used as a base for forming bowls. Select a circle of eighteen gauge copper a little wider than the finished piece is to be. Anneal and clean it. Choose a forming hammer with a rather large face. Check to see that there are no scratches or mars on the face. If mars are present the face will have to be refinished or every stroke of the hammer will carry the mar to the surface being hammered. Make a depression in the center of the bag. Hold the copper at a 30 degree angle to the edge of the depression so the edge of the circle just touches the depression edge, but so the circle itself is at an angle to the depression and not flat over it. Strike firmly with the hammer so that the highest part of the face of the hammer hits the circle one-quarter inch from the edge. Make the second stroke so that it overlaps the first one slightly and to the left. Keep moving toward the left, continuing until you have made one lap. Make the second lap slightly inside of this first one, keeping the blows uniform, and overlapping the previous row. Continue in this manner until you have reached the area you wish to remain as flat bottom.

Anneal the piece. Begin at the beginning and go over each lap as you did the first time. Anneal at the end of each course of laps. Continue this until the bowl reaches the desired roundness, ending by annealing. With a horn mallet or a rawhide mallet remove all the hammer marks you have made. At this point the bowl may be left plain and finished by buffing.

If a hammered finish is desired, a planishing hammer may be used to make uniform, overlapping marks which are applied in the same manner as the hammer marks which shaped the bowl. An opalescent finish may be obtained by immersing the bowl in a strong solution of ivory soap and allowing it to heat for a short while. Rinse and dry.

2. Wood Mold Method

An old butcher's block or a large log of wood set on end with a shallow depression six inches in diameter and about three-quarters inch deep in the center sloping up to the edge is a good base on which to raise a bowl. Follow the procedure used for the sandbag. The wood method has the advantage of being firmer and easier to use.



Aluminum Trays

Aluminum trays may be made and etched in the following manner: Select fourteen or eighteen gauge aluminum discs, sketch desired design on paper the size of the disc, and use carbon paper to transfer the design to the disc. Shape the tray on a fluting jig. Apply asphaltum paint with a small brush to all the areas that are not to be etched. Paint a second layer where the edge comes so that it will be tight and even. Inspect the painted area for pin holes or thin places and touch them up. Paint the sides and bottom of the tray. Allow to dry.

The fumes are very unpleasant. The etching is best done outside and on a concrete driveway where the acid may be dumped and hosed away when you are finished with it. Pour the fifteen percent muriatic acid solution into the tray and allow the etching to proceed. The solution in the tray should be stirred from time to time with a large chicken or turkey feather. This allows the etching to proceed more uniformly and allows you to see just how fast the etching is taking place; otherwise, the numerous bubbles will obscure the action. When the etching has proceeded to the desired stage, pour the acid off and rinse the tray in cold water. Let dry.



Two or three levels may be etched on the same tray if the design requires it. Leave the first areas painted and paint out the second areas. Check and retouch with asphaltum any places with bubbles or areas that are too thin. If all is well, add fresh solution and proceed as you did the first time. Double or triple etching gives the tray a perspective effect. When the last etching has been completed, rinse, dry, and use turpentine to remove the asphaltum; clean with a good detergent; rinse and dry. The tray can be polished by using fine steel wool and rubbing with rouge on a cloth.

Copper and Brass

Copper and brass book ends, bracelets, or trays are etched by using a ten percent nitric acid solution. The nitric acid solution should be kept in pyrex containers with lids. Cover the piece with asphaltum except the areas to be etched and immerse them in the etching solution.

Table of Acid Solutions

Pickle---10% sulphuric acid solution-----for gold, silver, copper, brass

Etching---15%-26% hydrochloric (muratic) acid-----for aluminum
10% nitric acid solution-----for silver, copper, brass

CAUTION:

ALWAYS POUR THE **ACID** INTO THE **WATER** CAREFULLY, **NEVER** THE OTHER WAY!



Landscaping is used to modify or control the environment of the building for our physical and spiritual needs. In home landscaping, you should plan to promote the kind of living you want. Landscape design is essentially a matter of strengthening the relationships between you and your land, keeping this relationship simple, strong, sensible, and satisfying.

Desired Attainments

A student will have gained some appreciation in the importance of landscape design in the community if he has learned to develop

a pleasant setting for a house which relates the building to the ground

attractive garden pictures to be enjoyed from the windows or the outdoor living areas

space for outdoor relaxation and eating

a place for active outdoor games, with emphasis on children's activities

an area for flowers, fruits, or vegetables.



a service area

an area for privacy.

Become familiar with materials and their use in landscape designing

ground surfacings, and water,
fences, walls, and hedges
overhead protection
plants

ground covers
trees
shrubs
flowers
fruit.

Landscape Design

Suggested Activities

Read and collect reference material on landscaping.

Make a scale plan of the land around your home, showing

- property lines
- house
- garage and other outbuildings
- walks and driveways
- existing trees and shrubs.

List the activities your family enjoys outdoors.

List ways to achieve space for your outdoor activities.

Develop a plan of landscaping to provide for these activities, considering the best shape for each part, and the unity of the whole design.



Materials and Tools

- cross section paper
- ruler
- pencils, drawing, and colored
- erasers
- magazines
- T-square

Leathercraft may serve as an avenue for creative production of leather objects which have a functional value. Within the activity lies a great deal of satisfaction for the student because he can see the form take shape under his hands. The choice of the project largely depends on the student's ability to work effectively with the various methods which may be used in decorating leather. The designs must be carefully planned and checked as to their appropriateness to the type of leather and the function of the objects.

Desired Attainments

Activities in leathercraft will have meaning to students if they

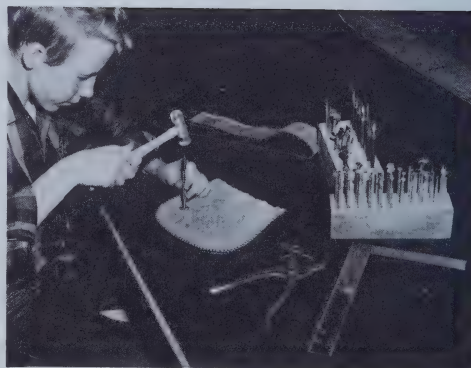
have gained an insight in the various uses of leathercraft

recognize the varying qualities of different kinds of leather

develop some standards of judgement of good craftsmanship and the aesthetic quality of a finished product

have learned to work creatively in leathercraft

appreciate the productions of a designer-craftsman.



Suggested Activities

Design and make

key cases
billfolds
purses
book covers

book ends
holster and belt
folios
picture frames

Materials and Tools

tooling calfskin
lining calfskin
suede leather

steerhide
cowhide
sheepskin skiver

(Weight of leather must be selected in terms of its use.)

lacing punch
ball point stylus
skiving knife
lacing needle
modeling tool spoon
snap setter
shears
creaser

"V" gouge
spacer
swivel knife
beveler tool
veiner tool
seeder tool
background tool
mule foot
leather cement

Methods

Avoid using kits and ready made patterns. Designing in leathercraft is a very important and fundamental step in the process of making an object from leather. It is necessary to experiment with the leather tools on various types of leather. Scraps of leather should be tested for the appropriateness of the technique to the quality of the leather.

Mobiles and stables are of comparatively recent origin. They tend to be rather largely abstract, although sometimes the motif is representational. Mobiles are the free swinging forms while stables are the immobile forms.

Desired Attainments

Through the planning and construction of mobiles and stables the student will have developed

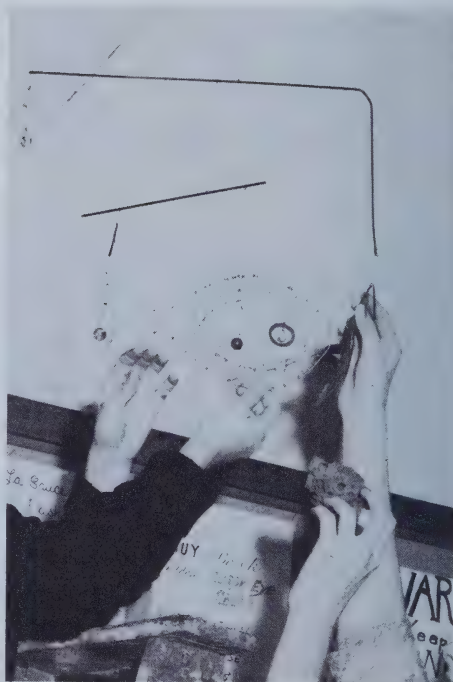
an appreciation of the abstract in art forms

an understanding of space and motion

an understanding of space penetration

a greater participation in the activities of school and community

a sense of achievement.



Mobiles and Stables

Suggested Activities

Make

- stables using toothpicks, straws, wire, balsa wood strips, basketry reeds
- mobiles advertising school functions
- holiday mobiles
- wind chimes
- mobiles using animal forms
- stables for school and community functions
- stables of string and cardboard
- stables of texture materials -- screenwire, hardware cloth.

Materials and Tools

- | | |
|--------------------------------|--------------------------|
| hay baling wire | pliers |
| cotton baling wire | round nose |
| screen wire | needle nose |
| hardware cloth | flat nose |
| metal foil | wire cutters |
| paint | tinsnips |
| paper | small, medium, large |
| cardboard | soldering iron |
| household cement | glue |
| thin glass | glass cutter |
| lacquer decal paint | plastic cement |
| glass beads | black nylon fishing line |
| reflecting beads | plastic scraps |
| thin wood | toothpicks |
| carpet warp | clothes hangers (wire) |
| solder and flux | balsa wood strips |
| wood or metal pieces for bases | basketry reeds |

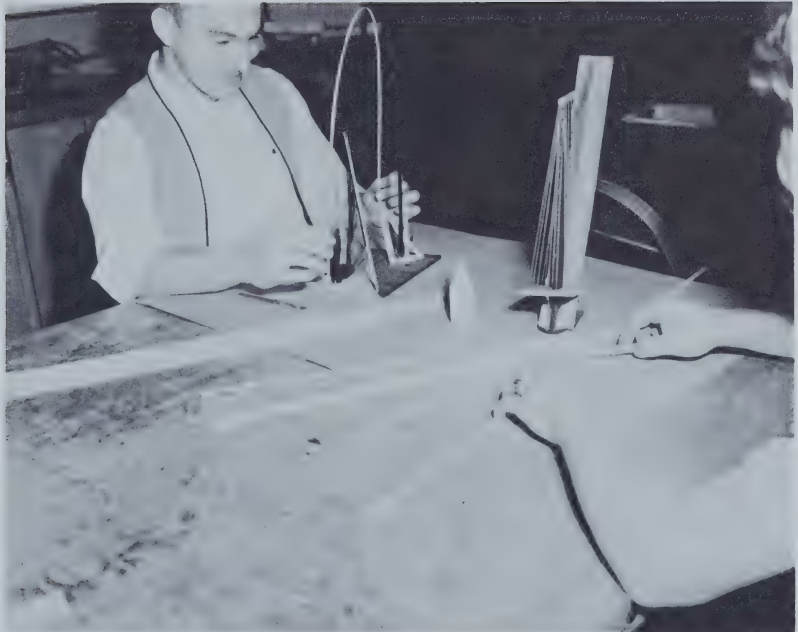
Methods

Mobiles-- Cotton baling wire makes good armatures for mobiles. It is strong enough, yet it can be bent when necessary. The various armatures may be tied together with nylon fishing line. Nylon does not tangle easily and causes the pieces to turn readily, allowing the various parts to swing freely. Begin with the smallest units, assembling the mobiles from the bottom up, and balancing each part before tying it to the next higher part. When balance has been achieved, a small dab of household cement applied at the spot where the string is tied to the wire will hold that section in place.

Motifs, dimensions, and materials may vary, but the general structure is the same for all mobiles. The Chinese wind chime is an old form of mobile. The structure is a little different than the modern mobile. Mobiles having a variety of textures as well as a variety of forms give pleasing effects.



Stables -- The non-moving structures may be of various materials in combination or of one material in many sizes and shapes. They may be mounted on platforms or be set on their own projections. Stables made of metal or wire may be soldered. Those made of paper or wood may be stapled or glued. The subject matter of both mobiles and stables will vary as the student wishes, for this medium permits free expression.



Mosaics of various types lend themselves to forming creative designs strong in expression and individuality. The methods and materials involved in making mosaics may vary according to their purpose. The design may be preplanned in color on paper or the design may be created as the project unfolds. The mosaics made of cut or torn paper, of seeds, of bits of glass or other appropriate materials may take the form of individual designs or group projects.

This type of project offers opportunity for students to make tesserae mosaic murals for their schools. Such an activity demands effective planning and organization by the teacher and students. The study of murals may extend the curiosity and information regarding the significant mosaics of the early Romans, and those of the Byzantines, and those of the Renaissance. Such an experience brings its full reward in growth in aesthetic sensitivity and a sense of achievement.



Desired Attainments

Learnings and appreciation in the art of making mosaics may include

gaining an appreciation of the history of mosaics and some knowledge regarding the significant mosaics which are our heritage

developing a sensitivity to the aesthetic quality of an appropriate and well-designed mosaic

creating designs in a choice of materials suitable to a specific purpose

working with tesserae

making ceramic tile

knowing the appropriate techniques related to the medium used for the mosaic.

Suggested Activities

Make mosaics for

plaque
wall panel
picture frame
waste basket
flower pot
portrait
tray
mural
decorative tile
table top.



Materials and Tools

- asphalt tile
- broken glass
- ceramic tile
- construction paper
- magazine slick-paper, colored
- egg shells
- metal scraps
- seeds
- stones
- commercially prepared tiles
 - Venetian and Mexican mosaic tiles
 - Byzantine tesserae
 - ceramic tiles
 - glass tiles
 - porcelain tile
- cutting tools
 - carpenters nippers
 - metal snips
 - glass cutter
- grout
 - white Portland cement
 - plaster of Paris
- binders and glue
 - water-proof vinyl glue
 - mosiac binders for setting tiles
- muriatic acid cleaner
 - one part acid added to twenty parts of water

Methods

Setting Tiles

Apply glue (white vinyl glue) with a brush -- small area at a time. Next, lay tiles into wet glue. If glue dries, apply new glue and proceed as before.

Use mastic adhesive to set tiles on vertical surfaces.

Grout

Mix a solution of 1/3 arabol to 2/3 water. To this solution add by sifting in grout powder; mix in slowly to avoid bubbles. When the consistency of very heavy cream has been reached, let stand for two or three minutes.

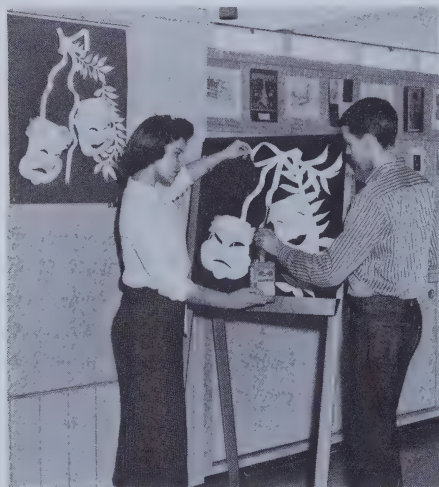
Pour grout on mosaic and work in until all voids are filled. After about ten to fifteen minutes, wipe off surplus. Now allow to stand until grout has set up ten to fifteen minutes more. Now wipe as clean as possible with damp cloth. Let stand overnight and give a final cleaning with a cloth dampened with acid solution.* For final finish, apply a pure white wax varnish and buff to a high luster.

* (Make solution with one part acid added to twenty parts of water. Muriatic or hydrochloric acid may be used.) Always add acid to water for safety purposes, never the water to acid.

Paper construction and paper sculpture permit the student to build three-dimensional forms easily and inexpensively. Paper forms provide a desirable transition from two-dimensional to three-dimensional expression. The vast range of colors and the ease with which the paper or cardboard may be cut, folded, scored, fringed, curled, rolled, glued, and stapled into shapes make this experience ideal for classroom use.

Desired Attainments

Experiences in designing three-dimensional forms will increase the student's ability to



create beautiful and useful objects

create pleasing forms and shapes

use paper as a planning material

utilize space as a design element.

Paper Sculpture and Construction

Suggested Activities

Make

solid geometric shapes by cutting, folding, and pasting

free form constructions

abstract or animal shapes by folding only

forms made by a combination of cutting, folding, and pasting

decorations - seasonal or holiday

packages and containers.

Materials and Tools

colored construction paper

colored tissue paper

cardboard

carpet warp

scratch paper for working out designs

scissors

stapler and staples

paper fasteners

single edge razor blades

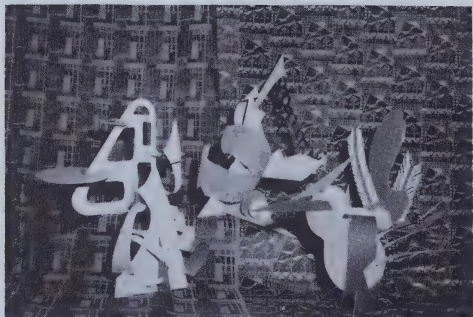
or sharp knife

Methods

Teach the students to cut, fold, and score the paper accurately. Help the students to sketch the plans for their objects. Make objects using few folds, then work toward the more complicated. Animal or abstract shapes may be folded from single sheets of paper. This type of oriental paper construction, called Origami, is rapidly becoming popular and many books describing this method are now available.

Paper becomes an interesting sculpturing medium by the fact that a flat, two-dimensional sheet of paper becomes stronger when bent. It may be rolled, bent, scored, folded, and cut into a desired shape that can support itself. Most papers are suitable for sculpturing purposes. The size of the model to be sculptured determines the type and weight of paper to be used. Small pieces may be made of lightweight paper, but large pieces must be made of a heavier paper or cardboard. If a thin paper is desired because of color or texture, it may be glued to a heavier paper for strength.

A sharp stencil knife or razor blade is desirable for cutting the paper because a knife gives a clean cut. Scissors may be used on lightweight paper.



Score paper by cutting half way through the surface of a heavy paper with a knife or by scratching or depressing a line by the use of a stylus on thin paper. Fold along scored lines to mold desired shape.

Basic shaping is done by bending or folding. If bent, the paper should be rolled with the grain. Some papers will break when bent against the grain. Tubes, cones, or arcs may be formed by bending. Folding gives a sharp transition from one plane to another. Straight, angular folds may be made without scoring except when heavy paper is used. Curved folds should always be scored first. Pyramids, cubes, low relief baroque, or curved pieces may be made by folding.



Variations for decorative purposes may be achieved by curling ribbons of paper, by pleating, by pinking the edges, by making holes with a paper punch, and by cutting texture patterns on surface planes and bending them out to catch light and cast shadows.

Sculptured pieces may be made of one sheet of paper, or they may be made of separate molded forms glued or stapled together. Free forms may be combined with other free forms or geometric shapes to make abstract objects. Realistic forms may also be made of combined pieces with most of the identifying features glued or stapled together.

Other materials, such as wire or wood, may be combined with the paper for interest.

The field of plastic art is a new and exciting one. During World War II plastics began to flood the market. Their primary function was to serve as a substitute for metal; but in many respects they failed in this capacity, and for this reason the public considered them inferior. Today the artist and the scientist have found that plastics have far more uses than they originally conceived. By studying the nature of acrylic plastics, artists have found that their transparent quality is a desirable characteristic. They have also found that when objects are sealed in plastic, they will not disintegrate. Opaque and transparent dyes may be added to the plastic so that it can be even more inspiring to the artist.



Although there are many varieties, the artist is primarily concerned with polyester and acrylic plastics. These plastics may be purchased in solid, liquid, or lump form. In the classroom the solid plastic is used for internal or external carving and is worked with drills, files, rasps, and sandpaper. The lumps are melted by heating and are usually used for casting but can be used for constructions and sculpture. This type of plastic is easily carved with wood carving tools. Liquid plastics have a wide variety of uses since they can be poured into molds or can be used for coating flat or curved surfaces.

Plastic Arts and Crafts

Desired Attainments

The student will benefit from working with plastics if he

approaches this new media with a feeling of adventure and experimentation

learns to respect the medium and works toward enhancing the characteristics of it, instead of trying to make it resemble another material

receives a feeling of accomplishment

develops the ability to recognize the qualities of good plastic objects
learns the techniques required to handle the materials.

Suggested Activities

Use plastics to make

trays
pictures
table tops
screens
lamp bases
lamp shades
boxes

book ends
bowls
jewelry
utensils
stabiles
mobiles
sculpture.

Materials and Tools

tongs	polyester rosin
sheet plastic	catalyst
files	dyes
grinding and polishing equipment	fiberglass mat or cloth
jeweler's cement	marble, masonite, glass or other smooth and level working surface
drills	wax
vises and clamps	putty
saw (coping or jeweler's)	objects for embedment -- rice and mulberry paper; dried foliage, leaves, seaweed and flowers; crushed glass, wire, cereals, seeds, keys, coins, buttons, pebbles, cellophane, sheer fabrics, and yarn



General Procedure for Laminating in Plastic

While there are other approaches to working with plastics, laminating has been selected as a challenging technique for senior high school students.

Select a smooth table or working surface of marble, masonite, or glass. Wood or formica surfaces are not suitable.

Prepare surface for working by polishing it with wax.

On this surface make a leak-proof form of putty one-fourth inch larger than the fiberglass mat.

Mix the rosin with catalyst, consulting the label for recommended proportions.

Cover the bottom of the form with rosin and spread evenly with a piece of cardboard.

Place the mat on top of the rosin, and push the mat down flat, using the edge of the cardboard as a squeegee to remove all bubbles.

Add more rosin if necessary in order to completely saturate the mat.

Arrange objects to be embedded on top of the saturated mat, and press them down into the rosin to remove air bubbles.



Coat the objects with rosin to glaze their surfaces.

Allow the rosin to jell.

Some rosins are thermosetting and must be heated. Consult the label for time and temperature.

Remove the casting from working surface and remove the putty edges.

Smooth the edges with power saw, file, or sandpaper.

This same general procedure may be used for coating curved surfaces.

Puppets and marionettes are valuable not for the learning processes involved in their creation, but also for the relation they and their use can have in portraying historical, literary, or life situations involving the students. By this means the students gain experience in stage craft, design, and in costuming.



Desired Attainments

The art of puppetry provides

experience in coordinating several arts

skill in using various materials

experience in creating usable puppets

development of appreciation of the work done by others

opportunity for group planning and production

awareness of quality workmanship

experience in the theatre arts.

Suggested Activities

Design and make

puppets from socks (socks may be seconds or manufacturers' discards)

puppets from cloth or felt

marionettes with jointed felt bodies

marionettes from pieces of wood cut to the right lengths for the body, legs, arms, and head

costumes and accessories for puppets or marionettes

stage sets needed.

Materials and Tools

paper bags
brown paper
socks
cloth, felt
pieces of wood
pieces of lead or lead weights
colored yarn
feathers
cardboard
crayons
leather scraps

needles and thread
tempera paint
shellac or varnish
screw eyes
nylon fishing line
coping saw and blades
hand drill
knife-whittling or pocket
scrap lumber
stapler
paste

PUPPETS

To make felt marionettes, sew narrow strips of either cloth or felt for the legs and arms of the marionettes. Make these strips double thickness and stuff them with shredded cellulose or other suitable material. Use wider strips for the body and head, stuffing them more firmly than the arms and legs. Sew across the places for the joints, sew lead weights on the bottoms of the feet, on the hands, and seat. Fasten the marionette strings to the toes, hands, seat, and head, also to the knees. Dress the marionette and it is ready.



Marionettes of wood are made by cutting strips of wood into the proper lengths for upper and lower arm and leg parts, and for the head and body. These pieces may be shaped or left square. They are joined by attaching screw eyes at the ends of the pieces and tying the screw eyes together loosely with nylon fishing line. The nylon fishing line forms the joints and allows the joints to move easily. A small plug of wood may be used as a neck, or the head may be continuous with the body separated only by a little shaping. The head may be formed of papier-mache. Hands may be cut in the ends of the arm pieces and small foot-sized pieces added to the legs. Join the pieces for the legs, attach them to the body; next join the arm pieces and join them to the body. Hair, yarn, or string may be added to the head, or it can be painted. Dress the marionette, and add operating strings, fastening them to toes, heels, knees, hands, elbows, head and seat.

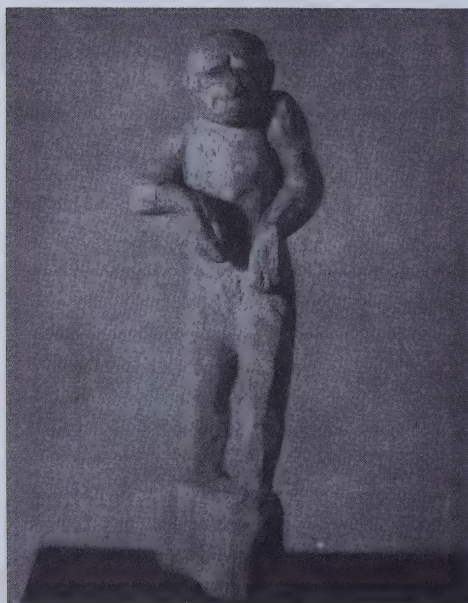
The strings are generally attached to an operating device made of two or more crossed pieces of wood.



Sculpture, the carving out of a solid, is a three-dimensional language concerned with the organization of masses or volumes. The sculptor composes his work in terms of volumes -- positive and negative -- planes, contours, light areas, dark areas, and textures. Technical handling, weight, resemblance, proportion, rhythm, texture, and the like, should all be of secondary importance to volume in sculpture. A feeling for form and volume cannot be acquired by merely learning a few rules. This feeling springs from continuous experiences with sculpturing; it must become a part of the student's makeup, and it must be fused with technical mastery of his craft. The student can read about others' work or look at it, but is through working himself that he can more fully understand it.

Desired Attainments

Students will have grown in this art experience if they



respect the qualities of different materials (their possibilities and limitations)

recognize the principles of design in three-dimensional work

appreciate function of sculpture throughout the ages to immortalize an idea or person, or to decorate buildings and interiors

become aware of new tendencies in sculpture of today

use tools properly

select materials that are suitable for sculpture

experiment with new materials.

Sculpturing

Suggested Activities

Sculpture in the round

portraits, figures, hand sculptures, bowls, animals, jewelry, non-objective forms, study work of masters

Reliefs

portraits, figures, masks, non-objective forms, animals, jewelry, study work of masters

Intaglio (incised relief)

portraits, figures, masks, non-objective designs, jewelry, study work of masters

Materials and Tools

Today's sculpture shows a wider variety of materials than ever before in history. Wood, stone, bronze, and clay have been standards through the years, but today interesting things are being done with many other materials, some of which are listed below. The practice of combining several materials in one piece is also a new and exciting one. Since tools suitable for one sculpturing material are sometimes unsatisfactory for another, the materials will be divided into two groups and the tools listed in each group are appropriate for those materials.

Materials - Group A

wood
styrofoam

Materials - Group B

stone
clay

SCULPTURING

Materials - Group A

flexible plastics
soap
candles or beeswax

Materials - Group B

block salt
ice and snow
insulating brick
plaster of Paris
rigid plastics
cements
special mixtures
soft metals
sculp - metal

Tools for Group A

flat chisels
gouges
pocket knife
parting or V tools
fishtails
files and rasps
sandpaper
oil stone
dragon skin
calipers
clamps or vises for holding work

Tools for Group B

sgraffitto tool
toothed scrapers
carving chisels
calipers
riffilers
rasps
bush hammer
pick hammer
iron carving hammer
hickory carving mallet
oil stone
files
clamps or vises



Formulas for homemade sculpturing materials

4 parts zonolite or vermiculite
2 parts plaster
1 part sand

1 part earth
1 part plaster

1 part zonolite
1 part plaster

1 part zonolite
1 part cement

By experimentation, other combinations of materials may be found. The formulas above do not give the amount of water needed since it varies according to the humidity and age of material. The proportions, however, will be approximately two parts water to three parts of dry material. It is not advisable to add water to the dry ingredients when using plaster, but instead, the dry ingredients should be slowly added to the water until a mound of dry material will stand above the surface. Although this method of measuring may not seem entirely scientific, it is more accurate than measuring plaster by volume or by weight. After the dry material has been added to the water it should not be stirred any more than necessary, and should never be beaten for this will cause air bubbles. Stirring causes plaster to set up faster so it is advisable not to stir it at all until just before using. Stirring also causes the plaster to be grainy.



Stones Suitable for Carving

Red, white, black, green, and pink marble; sandstone, alabaster, limestone, soapstone, commercially prepared stones and granite are among the most popular stones for carving. Granite, although widely used, is harder than the other stones listed and usually requires special tools.

Stone carving is not a cutting process but instead it is a matter of breaking and pulverizing. Stone sculpture is more durable than wood but in the past the process has been slow and laborious. Today many sculptors speed up the process by using power tools to rough out the piece and to smooth it. The sculptor should not work too rapidly, however, for stone has a grain and he must be aware of this fact at all times. If he ignores the grain, he is taking a chance of breaking off pieces accidentally. The structure of the stone should be studied throughout the sculpturing process.



Woods Suitable for Carving

There are hundreds of varieties of wood that are used for carving and whittling. The following list contains only a few of the more common ones--

Applewood is close-grained and suitable for delicate detail. It takes a good finish.

Balsa is extremely light weight and extra soft. It is easily cut and rarely used for sculpture for its lack of durability.

Cedar is a durable soft wood. This scented wood is easy to carve but rather brittle. The variation of color within one piece of cedar makes it a fascinating material.

Cherrywood with its reddish color is excellent for carving. It is a fine, straight-grained hardwood.

Cypress is a close, straight-grained durable wood. It is easily carved.

Ebony is a dense, heavy, tropical hardwood. It is very expensive but is a favorite among sculptors. The color varies from brown to black and comes in many different varieties.

Lignum Vitae is the heaviest, hardest, and densest commercial variety of wood in existence. It is a challenge to the sculptor and is frequently used for carving. It is widely used for sculpture mallets.

Mahogany has an excellent reputation among sculptors. It is strong, medium weight, and has great beauty and durability. It has a warm reddish brown color and takes a high polish.

Pine is a light-colored and uneven-grained softwood. There are about forty varieties of pine in the United States. Generally speaking the wood carves easily and is a good material for the beginning student. It has little durability, however, and splinters badly.

Teakwood varies in color from yellow to golden brown. It possesses great strength and carves nicely. It is excellent for detailed work.

Walnut is one of the finest of sculptural woods. The wood is hard and permits a delicacy of detail. Its brown color is darkened by linseed oil, but wax has little effect on it.



SCULPTURING

Woods Suitable for Carving (Cont.)

Oak, maple, and bois d'arc are all woods which are suitable for sculpturing as they may be worked easily and usually may be obtained locally.

The natural beauty of wood itself is a delight to the sculptor. Wood is an inexpensive medium and is easy to handle. Both hard woods and soft woods can be used sculpturally. Hard woods come from exogenous trees which have broad, flat leaves, whereas soft woods are secured from trees with narrow, resinous leaves. Generally speaking, hard woods are close-grained woods and are naturally more difficult to work than soft woods. However they are most durable, take higher polishes, and yield more sculptural pleasure in working. The color of hard woods is usually darker and richer. The same chisels may be used for both soft and hard woods, but the angle of the bevel of the chisel should be smaller for soft woods. When working with hard woods, it is necessary to increase the angle of the bevel to prevent the tool from breaking down.

**General Procedure for Carving**

Select piece of wood or stone to be used and study it to see what it suggests.

Make sketches on paper.

Sketch directly on the material with chalk or charcoal.

Rough out design with fast cutting tools.

Surface modeling may be speeded up with rasps and tools, such as emery cloth or dragonskin.

Develop shapes with smaller tools.

Sand and burnish.

Apply oils or waxes.

Buff.

After the piece has been roughed out, the surface may be finished with short clean cut tool marks, or may be smoothed rasps, files, or sandpaper. Once sandpaper is used, the sculptor should not do any further carving for the grains of sand embed themselves in the wood and will dull the carving tools.

The finish that is applied to the completed piece of sculpture is of major importance. Above all, the student should remember that camouflaging of one substance in imitation of another manifests lack of respect for the medium. Modern sculptors rarely use superficial coloring or extra shine polishes on sculpture, but rather seek to exploit the natural qualities of the material and place emphasis upon the inherent beauty of the specific material. Listed below are some suggested finishes which will give a soft satin finish to wood:

linseed oil

floor wax

nut meats

French polish (linseed, mineral, or machine oil, and shellac)

a mixture of olive oil, warm water, and vinegar.

The mass to be carved should be carefully studied before carving actually begins. As some sculptors put it, one should wait until the materials speak, for the finished carving should bear a resemblance in shape to the original stock. For this reason, it is usually more inspiring to work from irregular shaped stock than it is to start with a square block. Even though the student may make very careful plans before starting to carve, it is often necessary for him to change his plans after he begins. Wood and stone are powerful materials and it is advisable to let the material dictate. This is not a disadvantage, however, for it is these unforeseen irregularities in the material that make carving fascinating and enhance the finished piece. Usually it is advisable to carve with the grain, but the direction of the grain does not just run up and down. It waves in and out, goes around knots and at times even goes in spirals.

There has been much controversy on the subject of how carving tools should be held. Sometimes cuts will be made away from the carver and at other times toward him, but caution should be taken at all times to avoid injury. Tools should be kept sharp and in good condition since a sharp tool is easier to guide and will not slip as a dull one usually does. Hazards can also be greatly reduced by anchoring the sculpture in a vise or with a clamp.

Stagecraft provides experience in the practical application of three-dimensional design. It enriches the art program by taking the student out of the classroom and into a new realm of expression. Transferring a painted design into a real setting creates different and unusual problems in space and form relationships due to the magnitude of the stage area and in color usage due to the added effect of stage lights as a color medium.

Desired Attainments

Stage craft will be a meaningful art experience to students if they

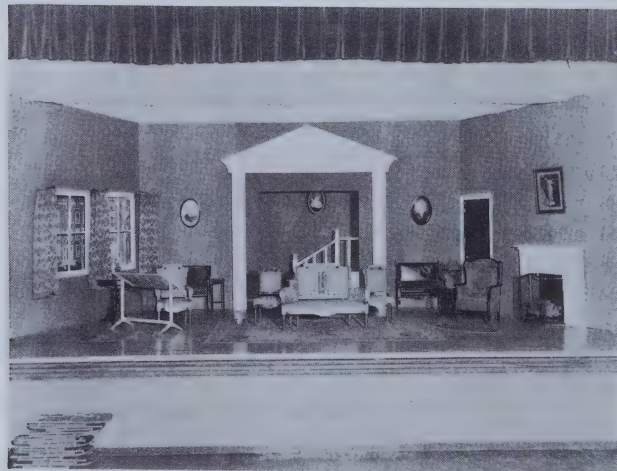
understand the relationship between art, music, literature, and drama in the theatre

use design and painting to clarify and enhance the mood and idea of the drama

know the importance of cooperative planning and group achievement

understand the process of developing a stage set from a scale drawing

utilize light to develop color and mood.



Suggested Activities

Design sets for

school plays
operettas and variety shows
school queen coronations
commencement
assemblies
dances.

*Design Costumes.

Experiment with lighting effects.

Construct, paint, and assemble

backdrops
borders
flats
groundrows and wing pieces.

Materials, Tools, and Processes

The illusion of reality created in many ways with a variety of odds and ends provides opportunities for making use of imagination and initiative.

lumber	saw
muslin	hammer
cardboard	pliers
plywood	stapler
wallboard	wire
chicken wire	nails
newspaper	string
burlap	rope
wheat paste	spotlights
casein glue	colored gelatine papers
paint	stage screws and braces
casein	
latex	
oil	

* See Costume Design under Dress Designs

Scenery Construction

Backdrops

The backdrop is usually a large curtain made of canvas or muslin sewed in vertical strips and fastened to a batten or horizontal pole. The curtain may be left unpainted, using colored lights to create the illusion of depth, or it may be painted with a scenic design giving added dimension to the stage set by the use of color and perspective of form.

If the stage has a fly loft, more than one curtain may be used, raising and lowering as scene changes are needed. A chain or pole should be attached to the bottom of the curtain. The weight is needed for lowering the drop and for keeping the drop free of wrinkles.

An unpainted drop may be extended on each side and curved around to form an endless sky drop.

A transparent curtain may be made of theatrical gauze, cheese cloth, and netting. The painted design on the curtain stands out when lighted from the front but fades away when backstage lights are brought up.

Painting

The cloth curtain should be sized with glue and given a priming coat of thin oil paint.

A scale painting of the design should be worked out to be used as a guide for the final painting. This is especially important if the project is handled by a group of students. Mark off the scale drawing and backdrop in proportionate squares and transfer the design to the backdrop using the squares as a guide for the drawing.

Using casein, oil, or latex paint, lay in thin coats of color. Paint each form or area as a flat pattern having a middle value of the final color effect. Paint in the broad shadow patterns. Paint highlights, texture, and descriptive lines, using a minimum amount of detail. Broad, free, expressive lines and patterns are more effective from the audience view. Much of set painting should be mere suggestion.

The overall set design should be viewed as a painting with the foreground and middleground objects standing free from the background. Each object should blend into a total effect reflecting the use of all elements and principles of design.

Check frequently from every angle of audience view to be certain of desired effect.

The use of colored lights gives added dimension to the backdrop and must be considered carefully throughout the painting, especially if the scenes change from day to night in the same production.

Check stagecraft books for special lighting effects or experiment with different colored lights using glazing technique in painting as a guide to possible effect.

Borders

Structure

A border is a width of cloth hung as a valance above the scene to hide upper part of stage. A series of borders from the front curtain to backdrop is needed to completely block the sightline.

Painting

The curtains may be of plain colored cloth, preferably dark. They may be painted to fit into the scene.

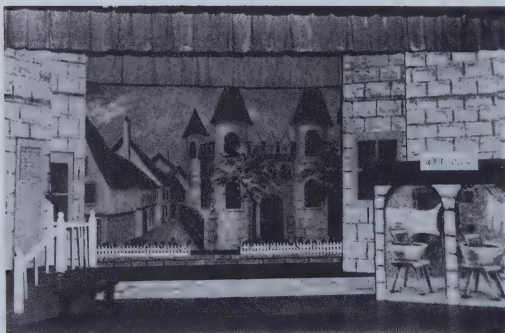
Leaf borders are especially effective for outdoor scenes. Canvas or muslin may be painted with leaves and scalloped or cut-out following leaf or branch contours. Openings may be cut into the foliage. If the material is not stiff enough to hang as cut, a gauze backing may be glued to back side to support the free shapes. Other borders may be made of gauze backing with cut-out forms glued or applied to it.

Flats

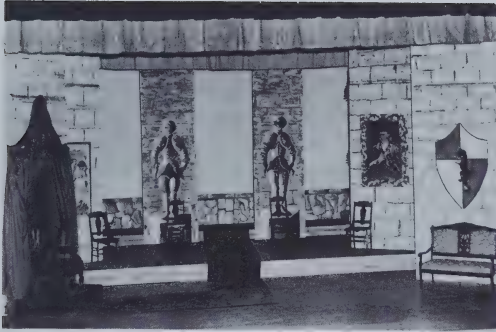
Structure

A flat is a covered frame. The frame may be covered with canvas or muslin in the manner of stretching canvas for oil painting. If the cloth has not been previously sized, lay the frame on the floor. Nail the cloth to the frame allowing enough slack so that the cloth touches the floor in the center of the section. Cover with glue and allow to dry. The drying will pull the cloth tight and smooth. If stretched tightly before sizing, the cloth may rip, and the frame may buckle in the drying process. Openings may be braced and attached to the frame and left uncovered as windows and doors.

If not too large, a frame may be covered with corrugated cardboard or wallboard. Sturdiness with lightness of weight is important for continued use and ease of handling and storing.



Flats are generally used for walls. They may be assembled in a series to form a box set. The box set has many variations. It may be formed of almost square corners, preferably with the side walls slightly raked or angled into the back wall so that each side is visible from the audience. Extreme rake of the sides and of back wall gives interest and allows for imaginative interior designs. Use a stage brace to secure the flat in an upright position. Additional security may be obtained by tying the flats together with rope laced around nails or hooks on the back side frame.



Flats may also be used singly on the sides of a stage to create an interior with a series of overlapping walls or an exterior with a series of overlapping buildings. Place flats at an angle, space from front curtain to back of stage, lap until sightline is covered, and secure with a stage brace. The space between the flats may be used as exits for the actors. The space between an angled flat overlapping part of a wall of an otherwise box set can serve as a hallway and conserve the labor and expense of building a framed doorway flat.

Book flats are effective for small scenes and may be placed in a larger basic set as a minor change. Two flats of the same size may be hinged together to open like the pages of a book. Three flats, two of equal size, one the total size of the other two or larger may be hinged together with the larger flat in the middle. The smaller flats fold in. Book flats will support themselves when opened to the proper angle.

For quick changes the same flats may be utilized throughout the production by painting them of a color suitable to each change and altering descriptive features on the flats. False windows and doors may be attached by hanging on a nail or hook for easy removal. The same may be reversed to become pictures on an interior wall or a different type of window or door. Other features may be removable also: roof tops, porches, curtains, wall paneling, or staircase fronts. Such a set is called a **unit** set.

The height of the flats depends upon the height of the proscenium arch and the length of border curtains. Flats 12 to 16 feet in height serve average purposes and are easy to handle. The width depends on ease of handling according to height. It is well to have a variety of widths for flexible wall units. Three, four, five, and six feet walls are good sizes with which to work.

Painting

Use casein, oil, or latex paints for mat finish wall colors. Do not use paint that dries with a gloss as it will reflect the spotlights and distort color and texture. Apply paint with a brush, spray, or roller. Textures may be added with dry brush, splatter, or stipple. A solid color is seldom effective. It should be stippled or splattered by using various tones or shades of the same color or by using other hues to create a depth of color that will respond readily to changes in mood and lighting.

Groundrows and Wings

Structure

Groundrows are low flat usually greater in length than height set at right angle to floor to represent distant landscape, trees, or rolling hills. They are also effective for close-up grass mounds, bushes, rocks, or walls. Wings are side pieces called tormentors which block the sightline to the off-stage area. Wings may be interior or exterior walls, rocks, trees, or foliage. Each is used to mask the bottom and sides of background and give depth to the setting.

The construction is similar to the building of a flat. Over a frame having the general contour of the desired object, canvas is stretched or paper or cardboard is tacked. Cardboard is effective where irregular edges are needed. Allow the cardboard to lap the frame enough to enable cutting the contour edge in the desired pattern.

A regular flat may be turned on its side or placed vertically and given a textured edge by attaching to it an extra irregular frame covered with cardboard or plywood cut in desired pattern. This is used generally for trees or bush clumps.



Irregularly shaped architectural objects, trees, and foliage pieces may be built on frames attached to a bar to be flown into the fly loft for scene changing. Cover the frames with corrugated cardboard. Cut out spaces between objects making sure that a part of the frame supports each cardboard section. This is especially effective for a grove of trees on a grassy mound. A series of these cut out flats gives extreme depth to the setting. The same effect may be obtained by gluing cloth cut-outs to a gauze curtain.

Dimension may added to the groundrow or wing by attaching several irregular frames together. Cover the frames with chicken wire and mold into desired shape. Cover chicken wire with papier mache, or burlap, or scrap cloth dipped in paste or glue. Rocks and trees are especially effective as three-dimensional objects. These can be made sturdy enough for standing upon if built around a platform type bracing.

Painting

Paint groundrows and wings in the same manner as the background. Sustain mood and coloring of setting. Allow pieces to harmonize and blend into overall setting as forms and patterns in a painting. Added dimension can be given the flat pieces by emphasis of light and shadow patterns and by exaggeration of perspective lines.

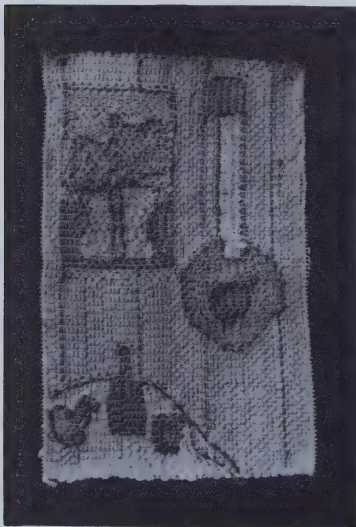


Stitchery is the art of working a decoration with needle and thread in stitches which are visible on already existent material. Embroidery or stitchery is one of the most ancient of the arts. It was not only used for ornamentation and beautification of fabrics but also was used as a means of record and commemoration.

The art of embroidery, which is based on a few simple basic stitches, has been developed into intricate patterns by persons of many nations in many different eras. The heritage of our own nation is exemplified through the embroidered samples and pictures of the settlers of the 17th and 18th centuries. Today wall hangings rendered in a contemporary manner by Mariska, Karasz, and other artists are exhibited in museums throughout the country.

Desired Attainments

The student will benefit from experiences in creative stitchery if he is encouraged to



develop interest in handwork as a means for home decoration and the enhancement of wearing apparel

create original designs elaborating on basic stitches

develop individuality and good taste through judicious application of design

appreciate more fully the art of hand embroidery

study the history of the art of stitchery and become more appreciative of the heritage of the past.

Suggested Activities

Decorate

samplers
wall hangings
draperies
pillow tops

maps
coat-of-arms
crests
pictures

Materials and Tools

Needles

crewel
darning
threaders
curved

Yarns and threads

crewel
embroidery floss
silk
metallic threads
yarns of various weights
worsted

Materials

unbleached muslin
linen
monks cloth
scrim
burlap
huck toweling
sheer or semi-sheer fabric
drapery materials
canvas

Procedures

Knowledge of basic stitches is the foundation of hand embroidery. Proficiency in the application of these stitches forms a base for creativity and originality.

Basic stitches may be classified as flat, basket, looped, chained, knotted, detached, composite, and couching. After the student has mastered the technique of the application of these fundamentals, an endless number of modifications and combinations can be affected to express individuality and originality.

In recent years weaving has been pursued with renewed interest both as an occupation and as a hobby. The public has come to recognize in some measure the importance of weaving as an artcraft. Hand-woven material is cherished as a valued possession and the weaving process is regarded by many individuals as a satisfying creative activity. For youth, as well as adults, the experience of weaving is very gratifying because they can see the formation of woven fabric taking place under their hands. Combining warp and weft threads and other suitable materials becomes a fascinating problem in design. Texture, pattern, and color arrangements challenge the weaver to experiment and to discover infinite possibilities in the production of textiles.



Weaving is one of the oldest arts and dates back to the time of the stone age. Museums show woven cloth of the Swiss lake dwellers of that age. Tombs of the Peruvians and the Egyptians reveal materials woven by skilled craftsmen of the fourth and seventh centuries. The original purpose of weaving was to supply protection against the elements.

In contemporary living man has found manifold functions for fabrics woven either by hand or machine. The basic technique, although highly mechanized in many cases, is the same today as it was centuries ago. Equipment may range from simple hand-constructed looms to multi-harness hand and power looms.

Experience gained from the most inexpensive looms is of value to the student who plans to go into industrial textile design, interior decoration, or dress design. Many machine made fabrics are first designed on hand power looms.

Desired Attainments

Weaving will benefit the student if he

approaches weaving as a creative art and not as a mechanical craft

learns to investigate the many possibilities of the loom and also to respect the limitations of it

gives discerning attention to the structure of textiles in terms of types of fibers used, the color relationships, and the design quality of the woven patterns develops an attitude of exploration as to the variety of combination attainable with any threading pattern

gains a better understanding of people from other parts of the world and other periods of history as revealed through their weaving industry and the types of fabrics they use for various purposes.

Suggested Activities

Learn to weave on simple vertical frame looms, two-harness looms and/or four-harness looms.

Learn how to set up a loom with ready-warped spools.

Suggested Activities (Cont.)

Learn to calculate and prepare simple warp in chains.

Learn all the steps of procedures for setting up or dressing a loom.

Learn to read draft of simple weave patterns.

Write to supply houses for samples of yarn and study types available.

Secure information as to types of looms found on the market.

Learn to identify basic terms used in weaving such as beater, dent, harness, heddle, reed, shuttle, warp, weft, sley, leash sticks, ratchet, overshot, tabby.

Learn to recognize different basic weaves such as plain, twill, satin, herringbone, M's and O's block units.

Experiment with color by weaving stripes and plaids.

Experiment with different types of thread to discover varying texture effects.

Build a simple loom.

Study history of weaving.

Investigate contemporary use of hand-weaving.

What to weave

aprons
bags
belts
bookmarks
chair sets
mats
neckties

pillow tops
rugs
scarfs
stoles
towels
wall hangings

Materials and Tools

yarns
threads
grasses
raffia
reed
leather

felt
wire
looms
shuttles
reed hook
leash sticks

Processes

Weaving techniques are often considered easy because weaving is done by young and old and frequently for therapeutic benefits. However, it is a complicated activity, and the teacher should have some experience with setting up a loom before attempting to instruct a class in weaving.

The study of pattern drafts is fascinating and requires intelligent insight as to types of yarns and patterns best suited for desired effects. The weaving process demands an intellectual approach in calculating how the threads are to be sleyed in the reed and arranged in the heddles. A weaver never finds the end of pattern possibilities; hence there is unlimited opportunity to learn new techniques and to create individual fabrics.

Basket making fulfills the same needs today as it did in ancient times -- use and beauty. It lends itself to a variety of materials and forms -- materials that can be found everywhere, and forms to suit every need or whim.

Basketry benefits adolescents by giving them another medium in which to gain aesthetic and tactile experiences. It develops skill and patience, rewarding the good workman with a handsome object. The useful and ornamental articles give the student a feeling of pride in accomplishment. This is another school-learned skill which can become the basis of a leisure time hobby or a life occupation.



Desired Attainments

Experience in basket making should help the student

understand the forms used in basketry

appreciate and respect basketry as found in past and present cultures

become aware of the possibilities inherent in the materials applicable to basketry.

Suggested Activities

Weave

mats of various materials that can be obtained commercially

baskets of materials that can be obtained commercially

baskets or mats of native materials collected and prepared by the students.

Materials and Tools

Reed - No. 1 - No. 7 round

1/4 inch - 1/2 inch flat

The smaller number is the smaller size.

raffia

cane

basket shavings of thin strips of
oak

grasses, sedges, and rushes

corn husks

yucca fibers

willow twigs, vines

inner bark of felled trees

bamboo strips

twine

awl, or ice pick

pocket knife

container to soak materials in
water

tapestry needle

Materials and Methods

Commercial materials such as reed and raffia are good materials for beginning students. These materials enable the student to complete a project in a rather short time. When the student has mastered the method of construction, gathering and preparing native materials may whet the enthusiasm for making baskets which are distinctly local in character.

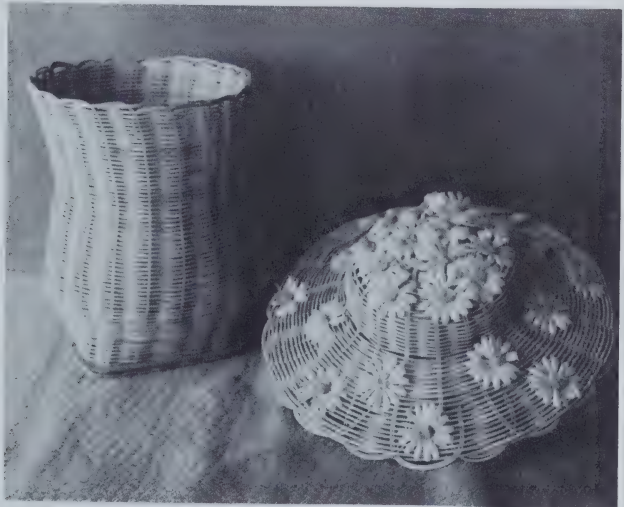
In making a basket a larger size reed such as No. 4, but no larger than No. 6 is used for the spokes, and a smaller size reed is used for the weavers. This is probably the easier way to start. Six to eight spokes are enough for a small basket. The spokes should be cut as long as the diameter of the basket, plus two sides, plus six to eight inches more for finishing.

Method One

Soak reed in warm water about one hour or more until it will not crack if bent double. When using an even number of spokes, divide them into two equal groups -- A and B. Cut a slit in the center of each reed in group A large enough to accommodate all of group B laid side by side. Insert all of group B through the slit in each reed in the A group. Adjust each group so that all reeds are evenly spaced. Insert one end of each weaver into the slit. Pass one weaver over group A, and the other weaver under group A. Cross the weavers between groups A and B. Then pass the first weaver under group B, and the second weaver over group B. Repeat for three rows, keeping the weavers tight. Next, the spokes are divided into groups of threes or twos -- weaver one going over three spokes, weaver two going under three spokes. Repeat for three rows. Spokes should now be evenly separated, and the weavers can go over and under each spoke.

New weavers are added by overlapping the ends of the old and the new weavers on the underside of a spoke. New spokes are added by cutting a point on them, and inserting beside the old spoke. To make larger baskets two spokes may be inserted beside either side of each old spoke. A gradual change in shape may be made by pulling the weavers more taut, or by shaping with the fingers. For sudden changes in direction, the spokes should be bent to the desired angle. They should be thoroughly wet to do this. When the desired size has been reached, all spokes should be trimmed the same length, and the basket immersed upside down in water to soak the reeds for the border. The border can be made by tucking one spoke in beside the next one, or by bending a spoke over two or three spokes before tucking it in.

Scrub the basket well to remove soil marks and allow it to dry thoroughly before applying any finish. The basket may be stained when dry and painted with lacquer or clear varnish. The baskets may also be waxed.

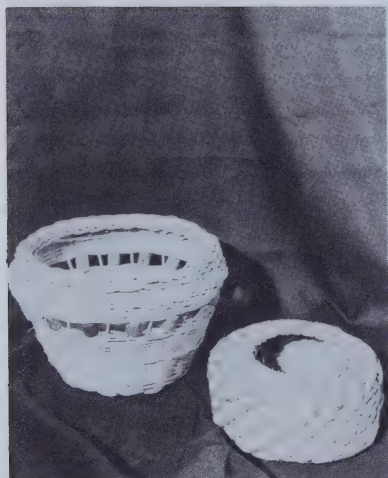


Method Two

As in method one, select and divide the spokes into two groups, A and B. Lay Group A at right angles to Group B, and on top of Group B at the center. Take one weaver. Wrap it over the top of the entire Group A, under the entire Group B, over Group A' and under Group B'. Do this clockwise. When you return to the beginning end of the weaver "C," go over the weaver, then under Group A, over Group B, under Group A', over Group B', and under the weaver "C." Repeat twice. Insert the second weaver and proceed from here as for method one, using two weavers.

Trays and Mats

Trays and mats can be made of raffia wrapped around a large sized reed -- No. 6 or No. 7. Start by bending the wet reed in a hairpin shape. Thread raffia in a tapestry needle, and beginning at the bend, lace over and under these two sections. The length of the starting section determines to a large extent the general shape of the tray or mat. When the raffia reaches the open end, bend the reed around the open reed clockwise. Continue wrapping the reed with raffia in the following manner:



Wrap the raffia around the outer reed four times, then take a stitch around the outer reed and the reed next to it toward the center. Repeat until the tray or mat reaches the desired size. When wrapping the reed at the turns, be careful to keep the work flat. The edge is made by laying the reeds on top of one another and wrapping and catching as for the base. When the sides of the tray are as high as desired, the reed may be trimmed to a tapered point, and finished by wrapping and catching with the raffia. A design may be developed by using several colors of raffia as the tray or mat is formed, or raffia stitchery may be applied after the tray is finished.

Other mats can be made by placing thumb tacks or small nails in two parallel rows ten inches long and eighteen inches between the rows. The space between the tacks in the rows may vary according to the coarseness of the materials used; one-half inch spacing works nicely with small reeds. When the tacks are in place, begin lacing the raffia or grass back and forth -- tying at the first and last tack. Now take small reed cut to ten inch lengths and weave over and under the raffia until the area is filled. Start the alternating reed under the raffia. When all the space is filled, an extra length of raffia should be whip-stitched along both of the eighteen inch sides to make a firm edge. Tacks may then be removed and the mat varnished. Decoration should be applied before removing tacks.

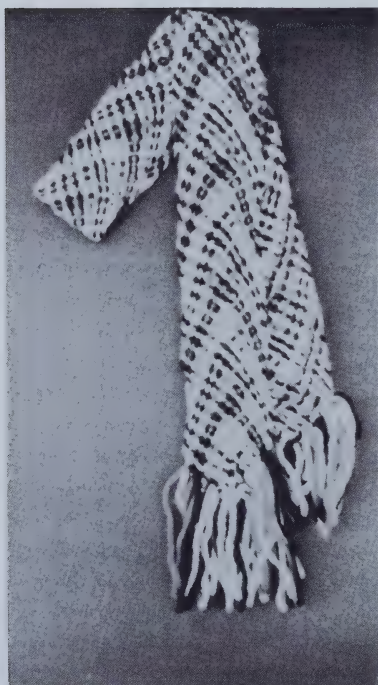
Shredded and twisted corn husks or grasses may be substituted for the reed. Trim the ends after the mat is completed.



Finger weaving can provide a meaningful background for other types of weaving. Finger weaving can be done more quickly than loom weaving. A variety of articles can be made with inexpensive and previously used materials. Some types of finger weaving may be done on a cardboard frame, while the others need simple equipment such as a board or dowel to hold the thread.

Desired Attainments

Finger weaving experiences have been valuable to the students if they have



developed an understanding and interest in the general aspects of weaving and textiles

constructed useful articles with inexpensive materials

learned to use proportion in relation to

size of person using the item
size of thread being used
amount of color to size of item
use of finished item
final appearance, appropriate and attractive.

Finger Weaving

Suggested Activities

Weave purses, bags, belts, scarves, place mats, using the desired weaving techniques.

Tapestry Finger Weaving I

For this type of tapestry weaving, it is best to use a drawing board, cardboard, or piece of wood for the weaving frame.

Decide the length of the article to be woven. The warp thread used must be double the length of the article because part of the thread is taken up in weaving. Be sure there are an even number of threads for this weave. The pattern will be determined by the arrangement of the number of colors and the placement of them. Place pins or tacks across the top of the board one-eighth to one-fourth inch apart in the desired position. Spacing will depend upon the size of the thread. Fasten a thread to each pin or nail. After the threads have been attached to the board, begin weaving by crossing the right center thread over the left center thread, pick up the second right thread over the left center thread, and under the right center thread. Repeat with the second left thread, and continue with each thread, going over and under until the outside threads are reached. Pull the threads toward the outer edge for firmness.

Wool, cotton, or nylon threads may be used for this weaving, depending upon the purpose of the strip. Several strips may be sewn together for scarves or place mats.

Tapestry Finger Weaving II

Any round object, such as a dowel, pencil or small mailing tube may be used for this weaving. Using short threads, make a loop which may be fastened to a door or drawer knob to hold the threads taut.

The final length of the strip determines the length of the warp threads in this weaving. The thread needs to be twice the length of the final product. After cutting the threads, place them over the rod, tying one to hold them in position. Here, again, the arrangement of the threads determines the design either stripes of color or combined textures.

Tie the weaving thread to the dowel. Lift the bottom thread and pass the weaving thread through, then reverse threads and pass the weaving thread again. Always lift the under thread either to the right or to the left but do not go both directions. Be sure to pull the bottom threads firmly so that the weaving will be of the same strength along the entire strip. Strips may be sewn together for larger objects.

Both of these types of finger weaving may be finished off by tying the bottom ends. These may be tied on to a belt buckle with a snap used to hold the end in the proper position.

Weaving a Bag or Purse

Use a stiff piece of cardboard or soft wood the size of the final article for the weaving frame. Insert pins one-eighth inch apart along the top of the cardboard or make slits across the top and bottom one-eighth inch apart, one-fourth inch deep.

Decide which shall be the top, as this will be the opening of the bag. For warp use crochet cotton or carpet warp. At the right side of the top, tie the warp to the first pin or tab. Go down the front of the card around the bottom tab and up the reverse side of the card. Go around the same tab at the top of the card, down the reverse side, around the next tab at the bottom, and then up the front. Continue this procedure across the card to the left side. By going around each of the tabs at the top or around the pins alternately, the opening of the bag will have been formed. It is important to count the threads. It is necessary to have an **uneven** number of threads in the warp for the weaving process.

For the weaving weft use a heavier thread, either nylon, cotton or wool, or use carpet warp. Put thread through a tapestry or sack needle, begin weaving at the bottom right edge, going under alternate threads. This creates a tabby or plain weave. When it becomes necessary to add additional weft thread, do not tie, but splice by going under the same warp threads allowing an overlap. Continue with the weaving. The next row will cover these spliced threads on alternate warps and hold the loose end in position. Continue this weaving around the card until you have reached the top of the bag. Remove the bag from the weaving frame.

With some imagination, interesting stripes and spots can be woven in with colored threads.

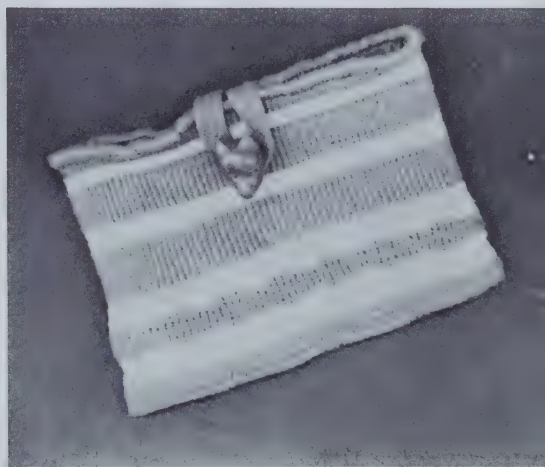
If desired, the bag may be lined with a suitable material. Loose ends hanging on the inside from splicing may be trimmed. A zipper may be used for the closing of these bags.

Nez Percé Weaving

This fingerweaving results in a tubular piece of material, suitable for making purses.

Use a piece of cardboard for the frame. At one-fourth inch from the top of the board cut notches on both the left and right edges. Tie a string firmly around the board, fitting it into these notches.

Using a small size thread (crochet cotton or rag warp), cut lengths twice that of the board, plus two inches. Double the thread and loop it over the string and then loop it over itself to hold it in position. This looped thread makes one warp thread. Continue around the board, coming out with an uneven number of warp threads. For weaving, take a double thread, folded so that the ends are of uneven lengths. This is the weft thread. Loop this thread over the warp thread at the left edge of the board. Holding the warp in the left hand, twist the weaving thread at each warp with the right hand. This makes one of the doubled threads go on top of the warp and one go under. When the end of the weft thread is reached, overlay new threads as in the tapestry weaving. The weaving is finished when a suitable length for the purse is achieved. To finish off the bottom, remove the tubular fabric from the card and turn inside out. Tie the ends of the warp threads securely and trim for even length. It is advisable to line these purses. Designs can be achieved by using two colors as the weft thread.



In order to fully understand four-dimensional expression, it is necessary to understand what a dimension is and to review two-and three-dimensional forms.

An ideal point has no size, consequently, we could say that it has no dimensions or no extensions. However, if this point is moved in one direction it traces a path that is called a line. (See Figure One) This line would have no thickness, therefore, it would have only one dimension which would be length. If a one-dimensional line is moved in a direction which is perpendicular to its length, the area that is formed by this movement will be a plane and will have two dimensions--length and width. (See Figure Two) Proceeding one step further, if this plane is moved through space in a direction that is perpendicular to its length and width, it will create a volume which has three extensions or three dimensions (See Figure Three), length, width, and height. Since we cannot visualize more than three dimensions, some believe that this would be a good stopping place for the artist. The scientist can speak and calculate in any number of dimensions. As an example, when dealing with electrons, mathematicians say that the sixth dimension is the most "comfortable" way. The artist cannot go this far, but he can add another dimension. This **fourth** dimension is an extension in time.

If art reflects the life of the times it is inevitable that the modern artist will include this time-space element in his work. This is not only a problem of modern art but also a modern problem of art.

Basically, painting is a two-dimensional art form since the work is done on a flat surface. The Egyptians felt this limitation very strongly. Sculpture was a three-dimensional medium and was used for three-D problems, but they tried to preserve the purity of painting by avoiding the third dimension. The Egyptian artist was compelled to adhere to certain basic, traditional laws and the two-dimensionality of painting was one of these laws. To show depth in a picture was a sin against the purity of art. We also find a similar faithfulness to the purity of the plane in the early art works of Persia, Sumeria, Babylonia, Assyria, pre-Columbian America, and even China. In China, however, a two-D composition goes back very, very far, for the Chinese developed a passion for space-effects in a three-D sense and even a four-D motion at an early date.

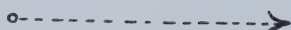


FIGURE NO.1

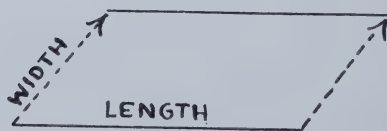


FIGURE NO.2

This respect for the two-dimensional plane almost dropped out of the picture after the Renaissance and many tricks were developed to give painting depth. The artist became an avid student of perspective and his goal was to show the object from one point of vision. It was not until Cubism became popular that the artist was seriously interested in a perspective of many changing points of vision.

Time-space effects can be achieved in art in several different ways, and a few examples can be found in very early works. As an example, the famous relief frieze of the Parthenon ran around all four walls, and it was necessary for the observer to view it piece by piece in a sequence of time. Actually this is true of any architectural form or even a painting on the surface of a round vase. Many Chinese scroll paintings, when viewed properly, are four-dimensional for the viewer unrolls only a section at a time, and as he unrolls the scroll he gets the impression that he is viewing scenery while traveling or that he is viewing some drama step by step. Another early example of four-dimensional art is found in Michelangelo's **Moses**. As the viewer moves around this masterpiece the expression of the stature changes from one of dignity to fury and the time element is essential.

One of the first mass movements toward showing motion in art can be found in the work of the Futurists. They attempted this by showing a number of different successive positions of the same figure. Their work might be compared to a multiple photographic exposure. The difficulty here was that the time element was overlooked, for the viewer saw all positions of the arm, as an example, at the same time.

The Cubists also attempted to show movement by showing several different views of the subject superimposed upon each other as if the artist was moving around the model or as if the objects were being rotated.

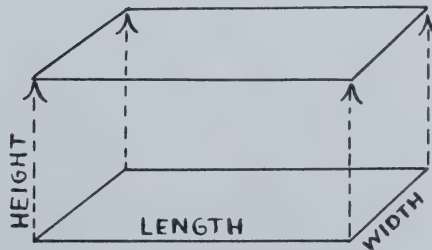


FIGURE NO. 3

Both of these were courageous attempts, but the main obstacle was that they overlooked the fact that painting was developed to render two-and three-dimensional effects and that it would be more logical to introduce a new instrument which was primarily constructed for four-dimensional performance.

Our first record of a four-dimensional art machine goes back to the early part of the 16th century. It is reported that Leonardo de Vinci made a sculpture of a lion that walked, bowed, and opened his chest from which dropped flowers. Whether this was a work of art or just a toy, no one knows.

The motion camera is an ideal instrument to introduce time into pictures in a perfectly natural manner for here the figures give a natural illusion for movement. Although Maholy-Nagy and several others have done exciting things with motion pictures, the instrument has been abused to the extent that most artists prefer not to become involved with it. The motion picture industry has also become so large and so expensive that it is almost impossible to risk an experiment.



Thomas Wilfred invented an art machine which he called the Clavilux or the color-organ. It contains three sets or types of keys; one controls color; another, form; and the third set is for motion. It is operated by moving keys and the pictures are projected on a screen. Methods of recording a composition have been worked out in a manner similar to the score of a musical performance so that compositions can be repeated. In fact, today, records can be purchased so that the machine will automatically repeat a performance.

Archipenko has invented another machine which produces a painted picture which moves but is not projected on a screen. This machine consists of strips of canvas on which pictures are painted. Each section contains a slightly different view of the subject, but when the machine is operating, the sections appear in rapid succession and give the effect of motion.

Alexander Calder's mobile is a recently discovered four-dimensional art form which deserves mention. It is quite simple in mechanics and, although used primarily for abstract art forms, it has many possibilities. Experiments have also been made with motor driven abstract sculpture where separate pieces move at different speeds and in different patterns.

The scientist and engineer have gone far beyond the artist in the field of speed and space, but we can expect a stronger development of four-dimensional art in the future.



NOTE: The suggestions for art history given in this section should not necessarily be presented in one year, but may probably be more effective if planned over a two or three year period.

PREHISTORIC AGES 100,000-4,000 B.C.

Stone and copper
100,000-30,000 B.C.
Man proves intellect by discovering natural resources.

Bronze
30,000-10,000 B.C.
Man learns to live in the society of his fellow man.

Protohistory
10,000-4,000 B.C.
Man organizes and regulates community life.

Cavemen used red, yellow, brown and black (earth colors).

Cavemen (southern Europe)--20,000 B.C. had paintings as wall decorations, carvings, pottery, tools, weapons, charms, and religious symbols.

Geometric designs, first, then naturalistic designs and symbols.

Painting was not the major art of any of the ancient cultures.

ANCIENT CULTURES (Classic) 4000 B.C.-476 A.D.

Mesopotamian (4000-30 B.C.)
Writing and cuneiform impressions.
Tools of copper.
Glass (crude)
Temples of brick (2600 B.C.)
Perspective unknown but depth shown by overlapping figures.
Bas-reliefs.
Arch, vault and dome construction in architecture.

Phoenicians (500-50 B.C.)
Carried their alphabet to Mediterranean area.

Egypt (3200-30 B.C.)
Art forms symbolic, rigid stylized art controlled by priests.
Pyramids, sphinx and stylized sculpture.
Papyrus

*The Greeks showed more originality and offered more than any other civilization before or since.

Writing with alphabet and had the Rosetta stone (key to hieroglyphic picture writing.)

Glass
Interior surface covered with designs.

Cretans (Minoans) 1500 B.C.
Huge jars as large as men to small cups, thin as eggshells and decorated with natural designs as birds, fish, and flowers.
Frescoes on walls.
Small statuettes as the ivory and gold snake goddesses.

*Greeks (Hellenic period, 1000-124 B.C.)
Writing with alphabet given by the Phoenicians.

Mosaic floors.
Frescoes on walls.
Mythology was stamped on the arts.
Architecture noted for balance and symmetry--aesthetic perfection was sought.
Mastered perspective in 4th century B.C.

Graceful stylization of design on vases.
Refined the art of casting metal.
Most ancient sculpture was realistically tinted.
A pitched roof was added to post and lintel construction in architecture.
Glass and pottery utensils for food.

Romans (750 B.C.-746 A.D.)
Their art and architecture was greatly influenced by the Greeks, with the possible exception of their strong portrait sculpture. Through copyists, a great variety of materials were used, including concrete.

MIDDLE AGES 1 A.D.-1500

China
Delicate, refined brush drawing.
Invented block printing and by 1066 were using movable earthenware type.
Invented paper.
Sung Dynasty is known for the finest of porcelains 960-1279 A.D.

Japan (313 A.D.)
Learned writing from China.

Early Christian (1-323 A.D.)
Christian themes in art, Good Shepherd, Lamb of God, peace, love, good will, and the virgin were symbolized.

Mosaic pictures on walls, floors, and ceilings.

Roman Christian (323-476 A.D.)
Crude carvings.
Church architecture.

Byzantine (365-1454 A.D.)
Printing invented in Germany.
Germany first to make fine crystal type glassware.
Natural forms still dominate in design.
Sculptured human form is prohibited, but is stylized in painting, mosaics, and bas-relief of stone, ivory, wood, and metal.
Woven designs in silk and cotton.
Gold and cabochon gems used for embellishment.
Jewelry has charm but is crude.
Geometric design is influenced by Mohammedans.
Architecture used domes and decorative round arches.

Medieval Period

a. Dark Ages (600-800 A.D.)
Struggle for supremacy after fall of Rome.
Little need for creation of beautiful objects, except for small objects that could be taken on raids and marches such as jewelry, crowns, and plaques.

b. Romanesque (800-1150 A.D.)
Monastic control.
General crudeness.
Architecture used round arches, crown vaulting and piers, low roofs, and small windows.
Profuse relief and sculptural decoration, and buildings were more military than domestic.
Mosaics and frescoes on large wall surfaces.
Religious symbols.
More sculpture than paintings.
Miniature paintings.
Altarpieces, crosses, armor and shields were typical.
Woolen tapestries were woven for cold walls for comfort.
Hand lettered and illuminated books with covers of carved ivory, gold, and gem embellishment.
Age of faith.

MIDDLE AGES (continued)

c. Gothic (1150-1500 A.D.)

Architecture used the pointed arch and were vertical buildings, rather than horizontal with high roofs.

Bas-relief.

Large stained glass windows and round rose windows were used.

Geometric pattern replaced with foliage and natural forms.

Book of Kells from Ireland and illuminated manuscripts as the Book of Hours are examples from this period, made under the church.

Age of faith.

13th and 14th Centuries

Pre-Renaissance painters

Cimabue	Simone
Duccio	Martini
Giotto	

RENAISSANCE 1400-1700 A.D.

Early:

Agony and suffering expressed — Christ in torment.

Gothic styles prevail.

Later:

Beauty created to tell story or portray likeness: naturalistic.

Artist strove for honor and money through commissions.

A. Early Renaissance (1400-1500) 15th Century

1. Italy

Andrea del Verrocchio	
The della Robbia	Filippo Lippi
Ghiberti	Mantegna
Donatello	Bellini
Botticelli	
Fra Angelico	
Verrachio	

2. North of Alps

Hubert Van Eyck (introduced oil painting)

Jan Van Eyck (introduced oil painting with his brother Hubert)

Roger Van der Weyden

Hans Memling

Bosch

Martin Schengauer (engraver)

Gutenberg (printed the Bible with moveable type)

B. High or Classic Renaissance (1500-1600) 15th Century

1. Italy

Michelangelo	
Raphael	Del Sarto
da Vinci, Leonardo	Tintoretto
Titian	Benvenuto Cellini

2. Germany

Grunewald
Durer
Hans Holbein, the younger
Pieter Bruegel, the elder
Lucas Cranach

3. English (1550-1700)

a. Elizabethan (1550-1600)

b. Tudor (1485-1603)

Influenced by the Italians but not much flourished except for portraits. The architecture was a form of domesticated Gothic and large.

c. Jacobean

Course oak furniture with bulbous legs.

C. Baroque (1600-1700) 17th Century

1. Rome and Venice

Gaily amusing and unrestrained but the architecture was over decorated. The painting and sculpture was emotional and exaggerated. The human form was used over and over in all forms of art.

Correggio	Tintoretto
Veronese	Mantegna
Caravaggio	Bernini

2. French (1525-1700)

Louix XIV

Known most for its interior architecture inspired by the Italian renaissance, but took on regional and national characteristics with charm, variety, and pleasing proportions, as can be seen in the chateaux and crafts.

Clouet	Pilon	Poussin
Jean Houjon	LeBrun	Lorrain

D. Restoration

Dutch and English styles copied in East.

Flemish showed a zest for life in their work.

Rubens
Van Dyck
Jordaens

Dutch artists

Frans Hals	Steen	Ruisdael
Rembrandt	Vermeer	De Hooch
Hobbema	Maes	

English

William and Mary

Known for their furniture styles.

Beginning of French influence

Beginning of Spanish influence in West.

Sir Christopher Wren (architecture)

Spain

Their art reveled in religious ecstasy.

Artists

Velasquez	Ribera
El Greco	Zurbaran
Murillo	

Architecture showed beautiful balance and symmetry which was more horizontal than vertical with the exception of the cathedrals.

General:

In 1450 Gutenberg introduced printing with movable type (German) and printed the first editions of the Bible.

Stained glass windows were naturalistic paintings on glass. This period saw the end of the glazier's art and craft.

Decorative tapestries for beauty were woven.

Superb craftsmanship in the minor arts was shown: jewelry, mirror frames, silver service, cups, and goblets.

Painting used mechanical perspective.

Portraits were religious, pagan, or biographical.

Sculpture was classic in Greek tradition.

Rolled glass for mirrors and windows were made in the late 17th century.

18TH CENTURY 1700-1800 A.D.

The French culture leads in Europe with truly gracious living. Its main outstanding artistic contributions are furniture and architecture and accessories.

Architecture is of the high renaissance period.

Accessories, as lamps, miniatures, porcelain, and table silver were important.

Furniture was delicate, ornate, and pastel.

Artists:

French

Fragonard	Nattier
Chardin	Boucher
Lebrun	Watteau
Pigalle	

English

Portraits and landscapes were shown in painting by such artists as;
 Gainsborough Reynolds
 Hogarth Constable
 Laurence Turner
 Blake (Mysticism)

Furniture periods:

Queen Anne	Chippendale
Georgian	Hepplewhite
Adams Brothers	Sheraton

Colonial American

Artists:

Peale, C. W.	Smibert
Stuart	Benjamin West
Copely	Pratt
Trumbull	Sully
Savage	

Spanish

Goya

19TH CENTURY 1800-1900 A.D.

England — Intellectual arts ascended
 Revolutionized the world as the modern period.

Neo-Classic style 1804-1850

1. Some architectural examples of this period are:

Monticello
 White House
 Capitol Building
 Washington Monument
 Le Madeleine (Paris)

Furniture was of the Empire and Regency style.

Portraits were given the classical treatment and were technically perfect, but lacked depth of feeling.

Craftsmanship was a joy to examine. This marks the last of the hand crafted period.

Photography was discovered by Daguerre (France) in 1837.

The Rotary press was discovered by Hoe (American) in 1846.

Linotype discovered by an American, Mergenthaler in 1880.

Artists:

Spain
 Goya
 Denmark
 Thorwaldsen

France

Ingres
 Chaudet
 Guerin

Britain

Bacon
 Chautry

American

Peale
 Jarvis
 Gray
 Trumbull

England (broke with tradition)

Bonington
 Constable
 Turner

2. Romanticism (1850-1900)

Paintings were sentimental, pictorial (Victorian).

Victorian furniture

Artists:

France
 Delacroix
 Gericault
 Delaroche
 Gerome
 Decamp
 Gleyre

Detaille
 Meissonier
 Dupe
 Neuville
 Flandrin
 Vernet

Britain

Alma-Tadema
 Maclise

Germany

Winterhalter (portraits)

U.S.A.

Leutze

Genre and animals

Britain

Frith
 Mulready
 Landseer
 Wilkie

Leslie
 Webster
 Morland

France

Bonheur
 Jacque
 Breton

Marcke
 Cottet
 Simon

Denmark

Block

Zorn

3. Realism (1850-1900)

Three separate reform movements started.

a. Barbizon school (Poetic landscape)

France

Corot	Millet
Daubigny	Rousseau
Diaz	Troyon

Dutch followers:

Israels	Mauve
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b. PreRaphaelite brotherhood (spiritual mysticism) artificial and thinly sentimental

England

Hunt
 Rossetti

Millais

Followers:

Brown	Hughes
Burne-Jones	Sandys
Collison	Watts

American followers:

Davies
Arts and Crafts
Crane
Morris

c. Hudson River school (Grandeurs of nature) U.S.

Bierstadt
 Church
 Cole
 Doughty

Durand
 Moran
 Kensett

Genre painters

Bingham

Mount

Indian life

Catlin

Johnson

Still life

Harnett

Originality in U.S.

Chase
 Eakins (realism)
 Homer (seascapes)
 LaFarge (stained glass)
 Ryder (mysticism)
 Sargent (portraits)
 Whistler (impressionism)

19TH CENTURY (continued)

Originality in France

Daumier (cartoons)
Dore (illustrations)
Monticelli (oils)
Puvis de Chavannes (murals)
Rodin (sculpture)

Realists in architecture

Eiffel (Eiffel tower) iron. France
Paxton (Crystal palace) iron and glass. England
Roebling (Brooklyn bridge) steel. U.S.

Historical periods reviewed in architecture

The introduction of machine made objects caused the decline of hand made crafts by the end of the century.

Les Fauves

Camoin
Derain
Dufy
Friesz

Puy
Maguin
Marquet
Matisse

Roualt
Van Dongen
Vlaminck

Henri
Lawson
Luks
Prendergast
Shinn
Sloan

Cubists

Braque
Delaunay
Gris

Kupka
Picasso
Villon

Marin
(watercolor)
Cezanne

Followers

Bellows
Dubois
Hopper
Kroll
Speicher
Soyer Brothers
John Stuart Curry

Expressionists

Roualt (religious anguish)
Chagall and Pascin (poetic nostalgia)
Modigliani and Soutine (social cynicism)
Munch (Despair)
Miro (fantasy)
Kokoschka (soulful violence)
Emil Nolde
Ben Shahn

Stylists (sophisticated simplification)

Georgia O'Keeffe Grant Wood

Romanticists

Benton
Brackman
Burchfield
Eilshemius

Pierce
Piper
Sutherland
Tchelitchev

Futurists (speed and motion)

Boccioni
Severini
Corra
Duchamp
Balla

Sculptors (influenced by classic subjects and simplifications of traditional techniques.)

20TH CENTURY 1900-2000 A.D.

Functional styles still in experimental stages from 1900-1924

Modern furniture

Charles Eames
Eero Saarinen

Paris Exposition introduced Modernistic style, 1925

International style architecture.

Frank Lloyd Wright
Richard Buckminster Fuller

First skyscrapers

Painting — international experimentation. 1875-1950

Impressionists

Bazille	Guillaumin	Morisot
Bonnard	Pissaro	Seurat
Cassatt	Manet	Sisley
Cezanne	Monet	Vuillard
Degas	Renoir	

Post impressionists

Cezanne	Segonzac	Utrillo
Gauguin	Seurat	Van Gogh
Redon	Toulouse-	Signac
Rousseau, H.	Lautrec	

Surrealists

Hans Arp
Burra (water color)
Chirico
Dali
Ernst
Blume

Klee
Masson
Miro
Roy
Tanguy

Abstractionists

Paul Klee
Manessier
Leger
Stuart Davis
Ben Nicholson

Nonobjectivists

Kandinsky
Mondrian
Moholy-Nagy
Pollack
Calder
Gabo
Moore

Primitive influences

Orozco
Rivera

Portinari
Tamayo

Realists

Ashcan school
Davies
Glackens

France

Bourdelle

Maillol

England

Dobson
Gill

Stevens

Sweden

Milles

U.S.

Faggi
Friedlander
Laurie

Manship
Zorach

Original artists who worked in more varied styles:

Archipenko	Modigliani
Brancusi	Moore
Epstein	Lipchitz
Gaudier-Brzeska	Zadkine
Mestrovic	

Industrial design is very important.

Plastics and other man-made materials are used.

Structural glass and fiber glass is an important material in architecture, as well as contrasts of textures in natural materials.

The trend is to blend architecture to its natural setting and bring the outdoors in through the uses of these materials.

In the high school, art education should provide a series of art experiences which will give the students a wide choice of creative activities. The teacher may correlate art with other subject areas if desired. Throughout the program the student should see the value of art in relation to his everyday life.

The art program should provide as many experiences as possible and should be adjustable to the needs of those students whose art education may have been nonexistent or inadequate. Many students will have limited talents, and it becomes imperative that they are reached. All students should gain an appreciation of their own work, that of their fellow students, and also that of the great artists.

The art program should give the students an opportunity to become familiar with design principles.

Since color has such a large part in today's living, it should be given much consideration.

The Teacher Must Consider

POINT OF VIEW OF SECONDARY ART EDUCATION

Is each art experience in alignment with the objectives of secondary art education?

DISTINGUISHING QUALITIES OF THE SECONDARY STUDENT

How do the mental, social, emotional, aesthetic, and physical characteristics of the student influence the year's program?

What previous art experience has he had?

What art experience is he capable of handling?

What art experiences does he wish to explore?

High School Art Program

CHARACTERISTICS OF THE ART EXPERIENCES

Does the art activity challenge individual creativity and initiative?

Does the art activity stimulate progressive development of skills and understanding of the creative art process?

Is the gifted student challenged to exert his best efforts in carrying out the project?

Will the retarded or handicapped student find satisfying experiences in the art activity?

Does the presentation of the art elements and principles fit into the student's level of working and his readiness of comprehension?

UNDERSTANDING HOME AND COMMUNITY NEEDS AND RESOURCES

Do the art experiences fit into the community, social, and cultural needs?

Will the art program assist the student to understand and meet his civic responsibility as related to art in the community?

Can the art project be justified to patrons as being worthwhile?

Are resource persons available within the community to share art experiences and knowledges?

PHYSICAL ASPECTS OF ART ROOM

Is the enrollment judiciously limited to afford adequate individual attention and supervision by the teacher?

Is the classroom of sufficient size to successfully handle a large project?

Do the furniture, tools, equipment, and storage space allow for ease in carrying out the project?

Can the discipline problems arising from the project be effectively resolved?

PLANNING THE ART HIGH SCHOOL PROGRAM

AVAILABLE SUPPLIES AND EQUIPMENT

What supplies are on hand?

What additional supplies will the existing budget allow?

Can the supplies and equipment be educationally justified to meet the needs of the senior high art student?

What indigenous materials are obtainable within the community?

Are the techniques involved in all projects within the student's range of comprehension?

Has the teacher adequately mastered the technique of demonstrating the procedure with ease?

SEQUENCE OF MEANINGFUL EXPERIENCES

Do projects early in the year afford opportunity for the teacher to become acquainted with the student's abilities and interest?

Does the project include an element of familiarity which will enable the student to achieve a measure of success and at the same time challenge him to further achievement?

Does the overall plan include a variety of two-dimensional and three-dimensional projects that will insure a well-balanced program?

Are the projects isolated units or are the knowledges gained from them applicable to succeeding units?

Does each project enlarge the student's awareness of art principles and their application to situations in everyday life?

Has each project helped the student to grow aesthetically?

STUDENT PROGRESS AND DEVELOPMENT

Are the art experiences helping the student to strengthen his aesthetic sensitivity and judgment?

Does the student show greater awareness of the role of art in his own life experiences?

PLANNING THE HIGH SCHOOL ART PROGRAM

Does the art experience provide meaningful hobby needs and show potential vocational opportunities?

Does the student recognize that art expression is individual and that the quality of a work of art is influenced by an individual's thoughts and feeling?

Does the student show increased skill in the use of his hands and tools?

Is the student gaining an appreciation of the impact which man's desire for beauty and creative expression has had upon the life of man throughout time?

Is the student developing individual thinking and extending his ability to solve problems largely through his own efforts?

ADMINISTRATION OF THE ART PROGRAM

In planning the program and selecting the art projects, has consideration been given to the levels of skills and understanding which the student can achieve in Art II, Art III, and Art IV?

Does the program planned for the advanced students provide for greater opportunity for extended study of a selected group of activities?

Can the activities within a project be adapted to the needs of the fast and the slow learner?

Note: It is recommended the size of an art class be limited to 26-30 students.

The following suggested programs could serve as guides for three years of sequential art education. They may be interchanged or revised as the need arises. Current art education literature will provide much information as to the trends of the day and many challenging methods of presentation.

PLANNING THE HIGH SCHOOL ART PROGRAM

PLAN A	PLAN B	PLAN C
Pencil drawing Nature forms Man made forms One and two point perspective	Pencil, charcoal, and chalk compositions utilizing the elements and principles of design	Drawing media Figure studies from the model
Charcoal and chalk Figure sketches Figure sketches stressing action	Charcoal and chalk figure sketches, portraits	Compositions employing the figure in relation to imagined or observed surroundings
Ink and Pen Experimenting with lines and textures for drawing with pen	Spontaneous pen and ink or brush and ink sketches of figures, objects, or landscapes	Spontaneous pen and ink and brush and ink sketches
	Illustrate a story or poem in pen and ink	Abstractions using mixed media
Experiment with brush in transparent water color on wet and dry papers	An abstraction using tempera	Composition from imagination in transparent watercolor
Still life and landscape paintings using transparent watercolors	Painting for an illustration using brush and ink washes	Composition from a sketch in transparent watercolor
Painting with tempera illustrating a suggested theme	Painting of nature from imagination or from a sketch using transparent watercolors and ink	Painting of school activities using tempera or mixed media
	Painting of a still life arrangement in tempera	Oil painting from imagination
Abstract design from colored paper for study of color and design principles	Abstract oil painting from a still life	Oil painting using figures or a character study
Abstract design in crayon etching	Paint a composition from the imagination using mixed media	Mural decorations by groups
All over design in tempera using color harmonies for specific purposes	Repeat design in tempera for specific purposes such as for wallpaper, textile, fly leaf for book	Abstraction developed from a landscape sketch in oil or tempera
A simple collage	A montage	
Tempera painting duplicating collage	Design combining brayer painting and brush	
Paper or seed mosaic		

A Unit in Art History

Select several artists from the given list of modern artists. Make a study of them and prepare bibliographical sketches.

Millet	Seurat	Vlaminck	Miro
Rousseau	Signac	Matisse	Dali
Corot	Cezanne	Roualt	Klee
Courbet	Van Gogh	Leger	Pollock
Monet	Toulouse-Lautrec	Kandinsky	Burchfield
Manet	Gauguin	Marc	Motherwell
Pissarro	Picasso	Mondrian	de Kooning
Degas	Braque	Chagall	Benton
Renoir	Derain	Duchamp	Weber (Max)
Daumier	Dufy		

Class Organization

The teacher can stimulate and inspire students by

maintaining personal enthusiasm

assembling, displaying, and discussing reference materials

using visual aids -- slides, films, film strips

assigning research problems to the students

developing an understanding of the sequence of one art movement to another

relating styles of this period to the styles of the past

encouraging analysis of artists' productions in terms of style and purpose

directing the study of art movements in terms of the students' ability to com-

prehend and assimilate the subject matter.

The Student

helps in assembling reference material

develops a research paper or prepares an oral report

becomes familiar with various subject matter and experiments with techniques and media used by the artists

learns to recognize a number of paintings by name and artist

develops some understanding of distortion in art

studies an original work or a reproduction to better understand underlying principles of composition.

Future Plans

This study of the beginnings of modern art may lead to

interest in modern interpretations in student work

development of individual style in student work

understanding of cubism, abstraction, and other modes of expression

appreciation of other contemporary trends of art

visits to art galleries to see contemporary art

collection of reproduction of art works

look for articles on contemporary art in current magazines and note the style of expression used by artists.

Evaluation

Teacher Evaluation

Did the student relate the modern movement to the times in which it took place?

Did the student appreciate the individual expression of the various artists as revealed by their works?

Did the student have an intellectual understanding of the artist's intent?

Did the student do independent research?

Did the student work beyond the basic assignment?

Did this unit motivate the student to explore various styles of art expression?

Self-evaluation by the Student

What new concepts have I gained about modern art?

Which artists of this movement can I identify and understand?

Can I recognize the artist by the style of his picture?

Has this study influenced my style of art expression?

In what way has this study enriched my understanding and interpretation of the modern art movement?

As teachers of art work with students of varying degrees of ability, they become more and more aware of individual differences and the resultant effect of education on each individual. They also become aware of the fact that the student of superior mental ability may have many frustrations in the area of art and is often unable to express himself creatively in this field. They, therefore, will study each student, his interests and his desires, his abilities and his frustrations to determine what his potential appears to be and build a curriculum for him which will give him an opportunity to understand his own ability, to express himself, to integrate and release feelings, and to build upon inner resources to the point that he will not submit to the pressures of conformity but rather is challenged to become the leader in the society in which he lives.

The student of superior mental ability is sensitive to the world about him and if properly guided, becomes extremely aware of his responsibility to use his ability for the good of society.

He has unusual ability to generalize, to associate ideas, to reorganize knowledges gained into new and complex relationships, to recognize the familiar in the unusual, to understand the various forms through which meanings are conveyed, and to transfer learnings from one area to another. He will quickly recognize the relationships between art and significant works of music and literature not only of modern times but of other eras: He will understand that art is one of the significant parts of the culture of any nation, and understanding the art of a specific nation, will have a better understanding of the mores of that nation.

Not only should this student study the cultures of the various peoples of the world, but he should be aware of the impact that the changing world has upon our culture.

Living as we are in an age of automation, care must be taken that the cultural aspects of our lives are not crowded out but rather intensified for our particular time. Architects, paint-

Superior Mental Ability

ers, sculptors, advertisers, and designers must be concerned not only with material and function but also with the aesthetic. They must be free to express themselves creatively, with originality and imagination.

To prepare for this, the student must be given a sound art education program throughout his school experience. He must be permitted to use materials and tools, to experiment with new ideas, to do research in all of the arts.

The teacher, of necessity, must be liberal in her presentation of all phases of art and realize that the interest of the student may not completely coincide with her's.

The suggestions given in this guide will provide for the student a program in art which will challenge him to develop skill, to explore, to elaborate, and to find a fulfillment of purpose in life which will make his adult life much richer and his contribution to society much greater.

It is strongly recommended that all teachers of art who are dealing with students of superior mental ability not only use this guide, but also read the excellent books and articles written recently pertaining specifically to the art education of these students. Among them are:

1. **Art for the Academically Talented Student in the Secondary School.** c. 1961, Edited by Edwin Ziegfield, National Education Association Project on the Academically Talented Student and National Art Education Association, Department of the National Education Association, 1201 Sixteenth, N.W., Washington 6, D. C.
2. **Working with Superior Students.** c. 1960, Edited by Bruce Shertzer, Science Research Associates, Chicago, Illinois
3. **Guiding Today's Children.** c. 1959, California Test Bureau, Los Angeles, California.
4. **Education of the Gifted.** c. 1958, National Society for the Study of Education, University of Chicago Press, Chicago, Illinois

The field of art offers as many career opportunities as any other occupational area in the United States today. Success in the field of art is no easier nor more difficult to attain than is success in any other field of endeavor. The field of art is so varied that it provides employment for people of many interests, skills, and levels of training.

Training, preparatory to entering the field, has been almost as varied as the vocational possibilities. The self-taught, correspondence school, professional school, and college graduates have found experience and personal ability the prime factor in placement and promotion. Though a professional school or college graduate may find it easier to enter the profession, a degree is not mandatory over ability and type and amount of training are not always a guarantee to successful placement. Our present highly competitive business world, however, demands that an artist not only have the ability to create a meaningful work of art, but also have a background of experience or training in the technical resources of his job.

VOCATION	DESCRIPTION	EMPLOYMENT
Advertising		
Layout Artist	The advertising artist clarifies and explains an idea or situation through pictorial illustration, usually accompanying the printed word. He designs layout of the printed word or the layout of word and picture combined for the purpose of selling a product.	Newspapers
Lettering Artist		Ad agencies
Illustrator		Commercial printers
Photo Retoucher		Public relations and publicity firms
Cartoonist		Studios of design
Label Designer		Display companies
Chart and Map Maker		Retail stores
		Mail order houses
		Television studios

Vocational Possibilities

VOCATION	DESCRIPTION	EMPLOYMENT
Architecture		
Community Planner Architectural Engineer Architectural Designer Draftsman	The architect may be a draftsman, a designer, or an engineer, or all three to plan and construct buildings of all types. He may specialize in one type, home, office, church, or public. He plans parks, community centers, shopping areas, and urban settlements.	Free lance Architectural firms Engineering and construction firms Government agencies
Art Education		
Art Historian Archeologist Museum Curator Art Restorer Art Teacher Public School University Researcher	The art educator teaches the creative art processes to prepare other artists for the profession. He may care for and preserve historical works of art and present them for public observation and education. He often is a technician improving the mediums and techniques of the creative arts.	Universities Professional schools Public schools Galleries Private Public Museums Art material manufacturers Government agencies
Cartooning		
Cartoonist Advertising Comic strip Comic book Gag-panel Editorial Animation Training manual	The cartoonist illustrates in a satirical or humorous manner for social comment, highlighting news topics or people in the news. He emphasizes idea or situation for advertising purposes. He entertains through gag-panel or continuous story as in comic strip or motion picture art.	Free lance Newspapers Magazines Ad agencies Publishing companies Private enterprise Television Movie industry
Ceramics		
Sculptor Potter China Maker Glazier Tiler	The ceramist works with the art and technology of making clay products and similar ware. He designs and makes decorative and useful objects, such as, figurines, vases, and dinnerware. He may work with glass and metal to fashion ornaments and stained glass windows. He may design and construct mosaics from clay and glass.	Free lance Brick and tile companies Glass industries Pottery and chinaware manufacturers Arts and crafts shops

VOCATIONAL POSSIBILITIES

VOCATION	DESCRIPTION	EMPLOYMENT
Display		
Window Trimmer Display Director Display Consultant Carpenter Sign Painter Designer	The display artist arranges merchandise in show windows, showcases, on walls, counters, or other areas of a retail store. He may design, construct, and paint all props and backgrounds, or he may assemble already prepared props to advertise and sell products. He may arrange informative or educational materials for business or professional conventions.	Retail stores Wholesale companies Manufacturing companies Advertising agencies Free lance
Fashion Design		
Designer Tailor Dressmaker	The fashion designer creates wearing apparel of all types for men, women, and children, usually specializing in one particular field.	Fashion houses Tailoring houses Mail order houses Department stores Free-lance
Graphic Art		
Printer Print Maker Illustrator	The graphic artist works with the printing processes. He may be a printer or work in a printing plant, but he is usually considered as a fine artist as compared to the advertising artist who is connected with the more commercial aspect of the printing industry. He works with lithography, etching, serigraphy, and other processes making fine prints, illustrations, and designs.	Printing shops Magazine publishers Book publishers Textile plants Free lance
Greeting Card		
Cartoonist Illustrator Designer	The greeting card artist is in a specialized field which utilizes the talents of the cartoonist and illustrator. He conceives ideas and illustrates them or illustrates the ideas of others.	Greeting card firms Free lance

VOCATION	DESCRIPTION	EMPLOYMENT
Illustration		
Illustrator Fashion Magazine Book Newspaper Advertising Production	The illustrator clarifies and explains ideas and situations with a picture. His job may involve picture illustrations for magazine and newspaper stories and advertisements, or it may consist of a series of pictures for magazine stories and book illustrations, catalogue, and training manuals.	Newspapers Publishing companies Fashion houses Retail stores Mail order houses Ad agencies Machinery and parts manufacturers Government agencies Free lance
Industrial Design		
Designer Automobile Machinery Appliances Furniture Product Package	The industrial artist gives beauty and function to the designs of the container, the encasement, the body, or the outside appearance of manufactured products.	Automobile manufacturers Machinery and tool manufacturers Furniture makers Household appliance manufacturers Office appliance companies Cosmetic companies
Interior Design		
Decorator Home Business	The interior designer works with fabrics, wood, metal, glass, paint, furniture, and other materials to beautify a room in a home, office, or business firm. He may work with the architect in planning the interior of a room or building, or he may embellish the architect's already designed and constructed building.	Furniture stores Department stores Architectural firms Interior design firms Free lance
Jewelry and Metalry		
Lapidarist Silversmith Goldsmith Metal Craftsman Jeweler	The jeweler and metal craftsman designs artifacts for bodily adornment and articles of beauty and utility for the home.	Free lance Jewelry manufacturers Arts and crafts shops

VOCATION	DESCRIPTION	EMPLOYMENT
Lettering		
Sign Painter	The lettering artist works in several fields doing brush and pen lettering for advertisements and illustrations needing captions. He may be an independent sign painter or do placards, signs, and posters for business establishments.	Advertising display companies
Letterer		Outdoor advertising companies
Poster		Retail stores
Billboard		Printers
Display		Government agencies
Advertising		Free lance
Painting		
Illustrator	The painter is an artist who makes his living or part of it by expressing his personal thoughts and observations in a painting medium to satisfy his own creative abilities or to please other people.	Free lance
Painter		Magazine publishers
Portrait		Book publishers
Landscape		Design studios
Other		Universities
Educator		Galleries
Photography		
Photographer	The photographer may have his own studio catering to the public in portraiture and commercial work. He may be employed to record timely events, portray character studies and supply illustrations for stories and advertisements.	Newspapers
Portrait		Magazines
Fashion		Ad agencies
Magazine		Photo studios
Newspaper		Government agencies
Commercial		Free lance

VOCATION	DESCRIPTION	EMPLOYMENT
Sculpturing		
Sculptor	The sculptor works in stone, wood, metal, plastic, and other materials, creating three dimensional objects for building embellishment, community memorials, room ornamentation, or objects of art.	Free lance
Portrait		Architectural firms
Figure		Universities
Memorials		
Building decoration		
Caster		
Educator		
Stage Design		
Designer	The stage artist interprets mood and provides atmosphere appropriate to the literature of the drama with three dimensional settings as background to the action.	Theatres
Painter		Television
Lighting technician		Movie studios
Costume designer		Outdoor theatres
Carpenter		Universities
		Theatrical supply houses
Textile Design		
Pattern designer	The textile artist creates designs suitable for reproduction on fabrics of all types and for various purposes. He experiments with dyes and weaving techniques both traditional and experimental to create new and interesting materials for home, personal beautification, and utility.	Textile weavers
Drapery		Textile manufacturers
Upholstery		Fashion houses
Linens		Toweling and line companies
Dressmaking fabrics		
Rugs		
Weaver		

The appraisal of the instructional program of the senior high art courses may serve to determine its effectiveness in terms of student progress. In the overall evaluation of the art program the point of view, the equipment and the materials; the role of the teacher, of the parent, and of the administrator; as well as the activities and growth of the individual students must be considered.* A continuous evaluation of the various phases of the program is necessary to organize the activities for successful teaching and to plan for the continuing program.

When a plan for evaluation is established, the teacher can more successfully arrive at a record of achievement and ascertain the future needs of each student. Each art experience should be evaluated in the light of what the student has gained through the studio and other instructional activities. The final product of a studio activity should be judged as related to the student's ability, interest, sincerity, industry, and growth. Creativity in expressing his ideas, sensitivity in the use of art principles, and effective use of the tools and materials must be evaluated in accord with the student's range of ability and pattern of growth development in art expression.

Appraisal by the students as a group is helpful to them in formulating criteria for self-evaluation. They will discover the use of principles of design in the analysis of their products, and the relationship of tools and media to the expression of an idea. Guided discussions of the student's class projects should be helpful in developing the techniques of constructive criticism. Evaluation should always be in terms of the goals for the activity which makes it important that the students understand the objectives of the class activities.

* The teacher should frequently review these sections of the guide for evaluative purposes.

Appraisal of Instructional Program

Appraisal of Student Experiences

The study of student development and achievement entails

a close observation of the student's behavior, his comments and his attitudes

an understanding of his culture

a study of his record of past art experiences

an examination of his art knowledge

an observation of his use of art techniques

the evaluation of his final product

a consideration of his use of art expression in self-selected art experiences

a view of the student's aesthetic growth.

Criteria for appraising student progress in art experiences should include how he works and the result of his activities.

Does the student

participate with sincerity and eagerness in art experiences

identify himself with the art problem and fully use his ability for creative and self expression in dealing with all kinds of materials and tools in light of his own level of ability

pursue art experiences with the thought of understanding more advanced techniques

show pride and satisfaction with his work

show willingness to cooperate with the teacher in assisting art promotion as it touches other courses and activities within the school and community

work with a sense of order and alertness

appreciate and show respect for the work of others

show willingness to experiment plan, choose, and evaluate as he works with various materials and ideas to achieve effective results

comprehend and utilize the elements and principles of design in relation to the purpose of his project

show progress in acquiring a working vocabulary of art terminology

pursue a problem until it has been completed

evaluate criticism with discrimination

show some interest in art of the past and art of today

show growth in personal qualities which reveal a respect for and identity with American ideals

realize that art has application to every phase of life activities - arts, science, and industry

reveal in conversation, in viewing available art exhibits and TV programs, and in reading books and magazines that he is beginning to recognize the significance of art?

Appraisal of Final Product

Appraisal of the final product is important for it reflects the student's thinking, his sensitivity to the art problem, and his ability to put his ideas into visual form. Evaluation of the art product reveals the success and growth of the individual in relation to previous experiences in art expression.

Does the product

reveal ability on the student's part to communicate his ideas and emotions through aesthetic expression

show that the student is sensitive to the nature of the materials, tools, and techniques used

demonstrate the student's ability to use effectively the skills needed to develop the desired visual form

indicate an individual approach to the problem and a continuous alertness on the student's part to take advantage of the creative process

show a harmonious relationship in the ideas expressed and the organization of the elements in the visual form?

Displays are effective ways to correlate art with school and community activities. They demonstrate the importance of using materials and design boldly to rouse interest and to sell an idea.

Desired Attainments

Experiences in designing displays should develop the ability to

simplify an idea for direct effect

organize materials to emphasize an idea or purpose

use lettering in a bold and simplified manner as an integral part of a display

use a variety of materials to give added attraction and interest

use color, line, and form boldly for emphasis.



Suggested Activities

Use displays to promote interest in

School Functions

Events - plays, dances, concerts, coronations, homecomings, organizational celebrations, sports, elections

Class room assignments - art work, craft objects, industrial arts projects, maps, pamphlets, magazine and newspaper clippings, books

Achievement - awards, trophies, club honors, student honors

Holidays and Special Days

American Education Week

Halloween

Thanksgiving

Christmas

Valentine's Day

Easter

Community Projects

Fire Prevention Week

Clean-up Campaign

United Funds Campaign

Historical Celebrations

Materials, Tools, and Processes

construction paper
poster board
corrugated cardboard
plywood
wallboard
beaverboard
chicken wire
rope
string

poster paper
cloth
foil
ink
tempera
pins
paste
staples
scissors
wire

DISPLAYS

Types of Displays

Bulletin Boards

Structure

A panel of beaverboard, cork board, corrugated cardboard, peg board, or plywood, usually permanently stationed to a wall of a classroom or a corridor, should be located in line of direct traffic or clear view.

Use

Bulletin boards are a means of communication, a visual aid for information and instruction, and panel for decoration.

Procedure

Consider the purpose for the display.

Check the size and shape of the panel and work out a design suitable to the area and purpose.

Work for balance, repetition, and variety.

Emphasize clever, brief headline using bold letters.

Use subtitles or other pertinent information in subordinate lines or patterns.

Illustrate where possible with bold lines, forms, and color.

Use a variety of material for interest.

Use three-dimensional forms for special effects.

Change the display frequently.

Attach materials with staples, pins, or thumbtacks for ease in assembling and dismantling.



Showcase

Structure

A showcase is a box on legs wholly or partly made of glass, or it is a wall receptacle equipped with a glass door; may have shelves.

Use

A showcase is a means of exhibiting three-dimensional objects to be viewed in the round or to be protected from handling. The wall receptacle may combine a background design or display with dimensional objects.

Procedure

Check the size of the case, the points of view, and the type and number of objects for exhibits.

Use background material suitable to the texture, color, and materials of objects to be shown.

Arrange the objects according to size, color, and importance.

Use posters and lettered placards for information and identification.

Place these flat on the background or tilt them at readable angles on shelves or bottom of case. Balance the arrangement of the cards with the arrangement of the objects.

Use nature forms, drapery, paper sculpture, and other materials to add interest and create special effects.



Movable Displays

Structure

Movable display boards are light weight panels of beaverboard, plywood, peg board, or cardboard usually framed with heavier wooden strips for hinging as folded screens or for attaching to metal or wood standards to be mounted in a series. A panel series may be placed flat against a wall, set up in accordion folds, or arranged in square or triangular box formations. They may be made of wood frames, covering the centers with string or rope or stretched fabric. Corrugated cardboard in large sheets may be folded to give the board strength for standing. Extra height may be achieved by cutting vertical slitting in the bottom of one sheet and the top of another and slipping the two boards together. Alternate the direction of open fold so that the boards lap.

Use

A movable display is used as a means of exhibiting a large collection of decorative or informative materials in progressive series. It is especially effective for art work, photographs, civic promotional campaigns, historical data, and memorabilia.

Procedure

- Determine the number and size of panels by the nature and number of objects for display.
- Check the location, space, and lighting.
- Plan panel arrangement according to viewing facility.
- Use paper or fabric for background interest.
- Organize materials for display in homogeneous groups or progressive stages.
- Mount on panels allowing for proper margins and spacing between objects. Do not crowd.
- Check for balance and harmony.
- Use posters or placards for information and identification.
- Add interest to display arrangement with colored and textured lines and shapes.

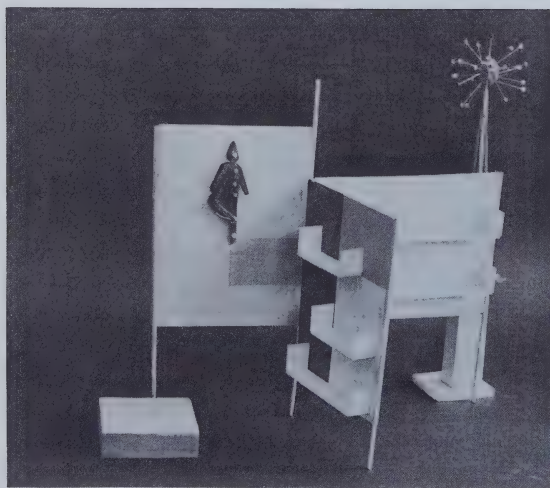


Table Top

Structure

Any table or counter top may be used for a table top display. The height depends upon the angle most suitable for viewing the displayed objects. The width and length should be determined by adaptability to the display area and the size and number of the objects. Add boxes or platforms in graduated tiers for extra height and variety of levels. Cover with paper or fabric for interesting background.

Use

Table tops are used for the display of three-dimensional items, usually of a small nature. They are suitable for architectural model displays, miniature landscapes, decorative seasonal, and holiday displays.

Procedure

Determine viewing angles.

Arrange tiers, if desired, according to viewing height and type of object.

Cover with suitable background material.

Arrange objects according to size, importance and type; work for balance, harmony, and emphasis.

Group small items for a more interesting arrangement.

Use placards for information as part of the display arrangement.

Unity, balance, and emphasis must be sustained from every point of view.



DISPLAYS

Suspended

Structure

Strings and wire attached to light fixtures, ceiling, rafters, and poles, are used to suspend display objects.

Use

The suspended display is most suitable for the exhibit of mobiles, winged objects such as birds and airplanes but also serves well for decorative or advertising displays.

Procedure

Check the room or display area for hanging facilities, lighting, general viewing.

Hang art objects such as mobiles or science objects such as birds and airplanes according to air flow and light source.

Vary the heights of the objects to create more interesting effects between the objects.

Balance the arrangement in relation to its surroundings.



American Art Clay Company, 4717 W. 16th Street, Indianapolis, Indiana.
 American Artist Color Work, Inc. 200 Fifth Avenue, New York 10, New York.
 American Crayon Company, 1706 Hayes Avenue, Sandusky, Ohio.
 American Pencil Company, 500 Willow Avenue, Hoboken, New York.
 American Tissue Mills, 6525 S. Lorel Avenue, Chicago, Illinois.
 American Handicraft Company, 12 E. 41st, New York, New York.
 Anchor Tool and Supply Company, 12 John Street, New York 30, New York.
 Art Mart, Inc., 31 North Meramec, Clayton 5, Missouri.
 Arts Cooperative Service, 519 W. 121st Street, New York, New York.
 Baders, 1113 Locust Street, St. Louis, Missouri.
 Binney and Smith Company, 380 Madison Avenue, New York 16, New York.
 Birmingham and Prosser Paper Company, 10 E. 40th Street, New York.
 Blackwell Wielandy Company, 1605 Locust Street, St. Louis Missouri.
 Blick, Dick and Company, Galesburg, Illinois.
 Bona Venture Supply Co., 6620 Thurston Avenue, St. Louis 34, Missouri.
 Brodhead Garrett Company, Cleveland 5, Ohio.
 Brown, Arthur and Company, 2 West 46th Street, New York 36, New York.
 Burgess Handicraft, 117 N. Wabash, Chicago, Illinois.
 Carter's Ink Company, 11 W. Hubbard Street, Chicago, Illinois.
 Castolite Company, Woodstock, Illinois.
 Clawson, Rex and Company, 1520 Main, Kansas City, Missouri.
 Central Scientific Company, 1700 Irving Park Road, Chicago 13, Illinois.
 Cleveland Crafts Company, 4705 Euclid Avenue, Cleveland 3, Ohio.
 Commercial Paste Company, Columbus, Ohio.
 Craftsman Wood Service Company, 2727 Mary Street, Chicago, Illinois.
 Craft Tools Inc., 396 Broadway, New York 13, New York.
 Craftint Manufacturing Company, 1615 Collamer Avenue, Cleveland 10, Ohio.
 Dennison Manufacturing Company, 300 Howard Street, Framingham, Massachusetts.
 Denver Fire Clay Company, Denver, Colorado.
 Division of Resouces and Development, Jefferson Building, Jefferson City, Missouri.
 Dixon William, Inc., 32-42 Kinney Street, Newark 1, New Jersey.
 Drakenfeld, B. F. and Company, 45-46 Park Place, New York, New York.

Materials, Tools, and Equipment

- Dremel Manufacturing Company, 2420 Eighteenth Street, Racine, Wisconsin.
- Eberhard Faber Pencil Company, 20 N. Wacker Drive, Chicago, Illinois.
- Esterbrook Pen Company, Camden, New York.
- Etchall, Inc., Columbia, Missouri.
- Grumbacher, M., Inc., 472 W. 24th Street, New York 1, New York.
- Hammett, J. L. Company, 264 Main Street, Cambridge 42, Massachusetts.
- Handicrafters, 1-99 W. Brown Street, Waupun, Wisconsin.
- Hicks Ashby Company, 1610 Baltimore, Kansas City 8, Missouri.
- Higgins, Charles and Company, Inc., 271 Ninth Street, Brooklyn, New York.
- Hoover Brothers, 1020 Oak Street, Kansas City, Missouri.
- Hughes Fawcett, Inc., 115-117 Franklin, New York, New York.
- Hunt, C. Howard Pen Company, Seventh and State Street, Camden 1, New Jersey.
- Immerman and Sons, 1924 Euclid Avenue, Cleveland 15, Ohio.
- Larson, J. C. Company, Inc., 820 South Tripp Avenue, Chicago 24, Illinois.
- Lily Mills Company, Shelby, North Carolina.
- Mayo Mills, Tarboro, North Carolina.
- Milton Bradley, Company, 75 Park Street, Springfield, Massachusetts.
- Morilla Company, The, 424 South Wabash Avenue, Chicago 5, Illinois.
- Mutscheler Brothers Company, Nappanee, Indiana.
- National Card, Mat and Board Company, 4318 Carroll Avenue, Chicago 24, Illinois.
- O-P Craft Company, Inc., Sandusky, Ohio.
- Permanent Pigments, Inc., 2700 Highland Avenue, Cincinnati, (Norwood Station) Ohio.
- Plastic Parts and Sales, 1115 S. Kingshighway, St. Louis 10, Missouri.
- St. Louis Crafts, 120 W. Moody Avenue, St. Louis 10, Missouri.
- Sheldon, E. H. Equipment Company, Muskegon, Michigan.
- Skil-crafts Division, Brown Leather Company, 309 Virginia Avenue, Joplin, Missouri.
- Strathmore Paper Company, West Springfield, Massachusetts.
- Structo Manufacturing Company, R.R. 75, Freeport, Illinois.
- Thompson, Thomas C. Company, 1639 Deerfield Road, Highland Park, Illinois.
- University Handicraft Service Company, 1267 Sixth Avenue, New York, New York.
- Weber Costello Company, 125th and McKinely, Chicago Heights, Illinois.
- Weldon, James W. Laboratory, 2315 Harrison Street, Davenport, Iowa.
- Wilson Arts and Crafts, Faribault, Minnesota.

Every community has material that lends itself to creative art activities. The use of indigenous materials in creative art activities stimulates interest in the aesthetic qualities in that which is seemingly commonplace. Natural and local materials should not be used as a substitute for the essential art supplies, but instead, the student's art experience should be supplemented and enriched through materials found locally. These materials must always be considered from the standpoint of challenging the student's ability and sensitivity as related to good design.

Following is a suggested listing of resource materials:

Materials	Suggested Uses
Glass	
jars	containers
plate or window	palettes
colored	blockprinting
mirrors	sagged (slump)
beads	mosaics
sequins	collages
Leather	
gloves	key cases
purses	comb cases
coats	coin purses
scrap	collage
	decorate boxes
	puppets and marionettes
	buttons
	jewelry
Metal and Wire	
coat hangers	mobiles
baling wire	stables
screen wire	construction
insulated wire	wire sculpture
coil wire	tools for clay and soap
	carving
bass viol wire (sterling silver)	jewelry
from strings	sieves
screen	wall hangings
screen, brass	
disc blade	base for mosaic tile
plow share	

Indigenous Materials

Materials

tin can
aluminum foil
foil food containers

paper clips
bobby pins

nails

sheet metal
brass
copper
aluminum

Suggested Uses

base for mosaic tile

decorative masks
mobiles and stabiles
containers
holiday decorations
collage

clay and soap carving

construction
filed for leather modeling tool

mobiles and stabiles
construction
holiday decorations
ash trays (formed)
copper enameling
jewelry

Paper

cartons
oatmeal
ice cream
egg
milk
cottage cheese with plastic lids

storage of supplies
molds for plaster of Paris
waste baskets
box sculpturing
display pedestals
mixing tempera for large
areas and storing same

INDIGENOUS MATERIALS

Materials	Suggested Uses
cardboard boxes mattress TV	painting surfaces construction puppet stages play or prom props easily carried drawing boards
cups, plates	storage of supplies box and paper sculpturing candle molds decorations display pedestals molds for Plaster of Paris
newsprint (mill ends)	layout work chalk drawings protective covering
newspaper	protective covering layout practice lettering pattern making protective pads molds for plaster of Paris collage
magazines and catalogues	pasting surfaces pad for block printing pad for pounding metal printing pad for cutting reference material

Materials	Suggested Uses
wallpaper books, rolls	pasting surfaces bulletin board covers print making collage card designing decorations decoupage
wrapping paper brown butcher freezer	for illustration and craft projects placemats cover items for storing papier-mache stained glass windows
colored paper cellophane crepe tissue	paper sculpture cards posters stained glass windows collage
paper towels	block prints outside cover on papier-mache drying leaves and flowers keeping clay damp
wax paper	for clay work with cleansing tissues to make Japanese paper placemats

INDIGENOUS MATERIALS

Materials	Suggested Uses
Natural	
driftwood	study of textures
rocks	decorative arrangements
nuts	blue print and spatter
seedpods	print compositions
grasses	print making
corn husks, stocks, cobs	mosaics
feathers	coil making
fur	animal figures
leaves	weaving
plants and roots	painting tool for textures
carving stone (soft)	mask and doll decorations
native clay	toy animals and puppets
woods - laths, boxes, boards	carving
pine cones	jewelry
shells	casting, modeling, collage
This and That	
asbestos shingle	fireproof and acid proof pad for copper enameling, soldering and metal work
bricks	soft models for carving
fire	hard models for protective heat resistant base
clay	concrete or cinder for shelf dividers
insulating	cinder for carving
concrete	insulation for carving
cinder	display pedestals
bottle caps	holiday decorations sick tray favors place card favors
starch	mixture for finger paint and silk screen paint stiffening for wrapped string decorations
balloons	mold for wrapped string and starch balls mold for draped clay bowls
excelsior	mask making stuffing for toys, puppet and marionette heads core for wrapped string figures

Materials	Suggested Uses
styrofoam from floral decorations forms	carvings decorative arrangements mobiles and stables
tiles ceiling wall, plastic wall, ceramic floor	carving painting surface decorate surface palette
sponges	clay modeling painting clean up work space designs print making textures
gourds	decorative arrangements mold for papier-mache
sawdust	modeling puppet heads masks holiday favors
plastic bags and sheets	covers for damp clay work storage and protective covering
plastic scraps	mobiles and stables jewelery buttons sagged
candles wax and paraffin	candlemaking tiles for carving and print making Batik printing
inner tubes	print making
tooth brushes	polishing spatter painting
exposed X-ray film and photo film	protective covering
duck shower curtains	sized used for canvas
split bamboo	construction of bird cages and cricket cages

EGG OIL EMULSION, 1.

Whole egg 1 part
Water 1 part
Damar varnish - 5 lb. cut 1 part
Stand oil 1/2 part

Mix egg and water thoroughly and add oil. Can be kept in tightly closed jars for a period of time.

EGG OIL EMULSION, 2.

Cut a raw egg in half.
Line a sterile jar with one half egg shell full of damar varnish.
Drop egg (white and yolk) into varnish lined jar and shake well.
Add one drop at a time one-half egg shell full of damar varnish into egg mixture, stirring constantly until well mixed.
Add one drop at a time one-half egg shell full of linseed oil into egg mixture, stirring constantly until well mixed.
Keep in a cool place.

Mixture is spooned onto palette and "stirred or smoothed" until clear but not crystallized.

GUM TEMPERA EMULSION

Gum arabic solution 5 parts
Stand oil 1/2 part
Damar varnish - 5 lb. cut 1/2 part
Glycerin 3/4 part

The gum arabic solution is made of 2 ounces of gum arabic to 5 fluid ounces of water. Mix thoroughly with egg beater. A small amount - 1% - of moldex or Dowicide will help prevent molding. Can be stored for months.

SLIP

Pour powdered clay into water until the mixture becomes thick like gravy. Cover tightly to keep a uniform consistency.

GROG

Roll out sheets of clay as thin as piecrust. Allow the sheets to become very dry. When the sheets are dry, roll with a rolling pin to break them into small pieces. Fire these small pieces by placing them in a shallow dish that you are bisquing. Spread thinly, using several dishes if necessary. These bits will not damage the dishes in which you fire them and they are easier to handle this way. After firing, sift the bits through screens of varying coarseness and store them in separate jars. Make grog of various colors.

KLIN WASH

Flint 50%
Kaolin 50%

Mix in water until it is as thick as coffee cream. Paint on the shelves with a small brush.

GLAZES

Adventurine cone 05-04

Borax	71.7
Red iron oxide	17.7
Flint	35.7
Copper carbonate	.2
Cobalt oxide	.05

Gold and red flecks when applied heavily. Best on red clay. High gloss.

Clear gloss cone 05-04

White lead	310.0
Whiting	20.0
Zinc oxide	32.0
Feldspar	112.0
Calcined kaolin	22.0
Flint	200.0
Bone ash	pinch

Tin oxide in amounts of 5% to 10% added to a clear glaze will make the glaze opaque in proportion to the amount of tin.

Zinc oxide in amounts of 5% to 10% added to a glossy glaze will give a matt or dull finish.

Sources of Visual Aids

A. F. Films, Inc.
1600 Broadway
New York, New York

Allen Moore Productions
7936 Santa Monica Boulevard
Hollywood 46, California

Bailey Films, Inc.
6509 DeLongpre Avenue
Hollywood 28, California

Copeland & Thompson, Inc.
206 Fifth Avenue
New York 10, New York

Coronet Films
65 East South Water Street
Chicago 1, Illinois

Encyclopedia Britannica Films
1150 Wilmette Avenue
Wilmette, Illinois

Indiana University
Audio-Visual Center
Bloomington, Indiana

International Film Bureau, Inc.
332 South Michigan Avenue
Chicago 4, Illinois

Life Filmstrips
9 Rockefeller Plaza
New York 20, New York

Museum of Modern Art
Film Library
11 West 53rd Street
New York 19, New York

National Film Board of Canada
680 Fifth Avenue
New York 19, New York

Teaching Film Custodians, Inc.
25 West 43rd Street
New York 36, New York

The Jam Handy Organization
2900 East Grand Boulevard
Detroit, Michigan

United States Department of Agriculture
Motion Picture Service
Washington 25, D.C.

University of Michigan
Audio-Visual Center
Ann Arbor, Michigan

Young America Films
18 East 41st Street
New York 17, New York

Visual Aids

A. F. Films, Inc.

Grandma Moses	22 min.
Jackson Pollock	11 min.

Allen Moore Productions

The Potter's Wheel

Bailey Films, Inc.

Understanding Modern Art Series	
Impressionism-example, basic characteristics, comparative analysis	7 min.
Cubism—tendencies, multiple view points	6 min.
Non-objective Art—how it differs from other types of painting	8 min.
ABC of Puppet Making, Parts 1 & 2 (2nd. Edition)	10 min.

Copeland & Thompson, Inc.

Clay, Hands, Fire

Coronet Films

Art and Life in Italy
Hopi Indian Arts and Crafts

Encyclopedia Britannica Films

Art and Motion #716	16 min.	Color
Arts and Crafts of Mexico #137	11 min.	B/W
Brush Techniques (Language of Watercolor) #375	11 min.	Color
Buma-African Sculpture #709	9 min.	Color
Clay in Action - sculpturing a portrait	12 min.	B/W
Creation of a Portrait #364	11 min.	Color
Drawing a Portrait #1611	11 min.	Color
Leonardo da Vinci #1542	25 min.	Color
#1557		B/W
Loon's Necklace		
Making A Mural #377	11 min.	Color
Metal Craft #236	11 min.	B/W
Oriental Brushwork - Techniques #1444	16 min.	Color
Painting a Portrait w.c. #1612	10 min.	Color
Painting an Abstraction (O'Hara) #436	11 min.	Color
Painting Clouds #1445	18 min.	Color
Painting Crowds of People #789	11 min.	Color
Painting Reflections in Water #376	11 min.	Color
Painting Shadows #1538	11 min.	Color
Painting Trees #759	16 min.	
Pottery Making #235	11 min.	B/W

Encyclopedia Film Strips

Arts and Crafts #7940 - Series
 Textile Art Through the Ages
 Metalwork Art Through the Ages
 Glass and Mosaic Art Through the Ages
 Ivory Carving Through the Ages
 Ceramic Art Through the Ages

Experiments with Sculpture #8380

National Gallery of Art #8940 - Series

60 frames each

Art in Early Renaissance Italy
 Art of Northern Italian Renaissance
 Art of High Renaissance
 Art of Northern Renaissance
 Art of Low Countries
 Art of Spain
 Art of Royal France
 Art of England
 Art of United States
 Art of 19th Century

Contemporary American Painting #7280

60 frames

Lets look at a Painting
 Realism
 The American Scene
 Romanticism
 Modernism

Indiana University

Craftmanship in Clay -- simple slab method
 Craftmanship in Clay -- stacking and firing
 Craftmanship in Clay -- glaze application
 Craftmanship in Clay -- decoration
 Craftmanship in Clay -- simple molds

International Film Bureau, Inc.

A Future for the Past -- cleaning and restoring pictures	30 min.	B/W
Art in Our World - what to look for and how to interpret	10 min.	Color
Artist and Nature	10 min.	Color
Bronze Casting of Sculpture	30 min.	Color
Collage - Exploring Texture	13 min.	Color
Color on a Stone - advanced work-processes in color lithography	13 min.	Color
Enameling Art	12 min.	Color
How to Make a Linoleum Blockprint	14 min.	Color
Meet the Artist	17 min.	B/W

Mono-type Prints	5 min.	Color
Mosaic Experiments	20 min.	Color
Mountain Farm (Paul Sample)	32 min.	
Picture Making by Teenagers	11 min.	Color
Poster Making -- Printing by Silk Screen	15 min.	Color
Rembrandt -- Poet of Light	13 min.	B/W
Silk Screen Textile Printing Techniques	11 min.	Color
The Finger Painting of Wu Tsai Yen	11 min.	Color
Torn Paper	6 min.	Color

American Artists

Art of Spinning and Weaving	30 min. silent	
Drypoint - demonstration	30 min. silent	B/W
Last of the Wood Engravers	30 min. silent	B/W
Silversmith	32 min. silent	B/W
The Etcher's Art	32 min. silent	B/W
Uncommon Clay	18 min.	B/W

Canadian Artist Series

Canadian Landscape	18 min.	Color
Klee Wyck	15 min.	Color
Lismer	18 min.	Color
Painters of Quebec	18 min.	Color
Short and Suite	5 min.	Color
Varley	16 min.	Color
West Wind	18 min.	Color

Elias Kolz Films -- Art Appreciation Series

Creative Design in Painting	1 reel silent	B/W
Painting of Landscapes	1 reel silent	B/W
Theatre Design	1 reel silent	B/W

Elias Kolz -- Graphic Arts Series

Making an Etching	2 reels silent	B/W
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Native Arts and Crafts

Artisans of Florence	22 min.	
Arts and Crafts of Mexico	11 min.	
Arts and Crafts of Norway	14 min.	Color or B/W
Eskimo Arts and Crafts	22 min.	Color or B/W
Habitant Arts and Crafts	10 min.	Color
Maya of Ancient and Modern Yucatan	22 min.	Color or B/W
Native Arts of Old Mexico	20 min.	B/W
Navajo Country	10 min.	Color or B/W
Peruvian Archaeology	10 min.	Color
Pueblo Arts	11 min.	Color or B/W
Quebec Handicrafts	11 min.	Color
Seminole Indians	10 min.	Color or B/W

VISUAL AIDS

ABC of Pottery Making	11 min.	Color or B/W
Cathedral of Chartres	10 min.	
Crafts of the Fire	10 min.	
Drawing with Pencil	11 min.	
Lithography	14 min.	B/W
Making Books	11 min.	
Plaster Sculpture in Color	11 min.	
Puppetry -- String Marionettes	11 min.	
The Potter	13 min.	Color
The World of Mosaic	28 min.	Color
Third Dimension -- Sculpture	17 min.	B/W

Painting Techniques

Abusson Tapestries	15 min.	
Brush in Action w.c.	11 min.	B/W
Design	11 min.	Color
Encaustic (Karl Zerbe)	19 min.	Color
Eye of an Artist	21 min.	Color
Lascaux - Cradle of Man's Art	17 min.	Color
Our Heritage #1 (India)	14 min.	
Our Heritage #2 (India)	16 min.	
Perspective Drawing	8 min.	B/W
Space	9 min.	Color
Watercolors in Action	12 min.	Color
Working with Watercolor	18 min.	

12 Films Strips on European Art --

Advanced High School Art for	
Study of Art History	20 frames
Ancient Egypt	#1068 - old kingdom - middle kingdom 3500-1700 B. C.
	#1069 - the Empire - 1580 - 1000 B. C.
17th Century Dutch Landscape Painting	#1035
French Painting of the 17th and 18th Century	#1044
French Painting	#1004 Impressionism #1016 VanGogh #1053 Toulouse - Lautrec
Twentieth Century Painting (in length)	25 frames
	#1062 Fauvism and Early Expressionism #1063 Expressionism #1064 Modern Painting I Cubism #1065 Modern Painting II Dada, Surrealism #1017 Picasso

Miscellaneous Subject Films

Loom Weaving	6 min.	Color
Painting Movement and Color with Chalk	11 min.	Color
Watercolors in Action	12 min.	Color

Life Filmstrips

Giotto's Life of Christ
 Middle Ages
 Michael Angelo -- Sistine Chapel

Contemporary Art
 Let's Look at a Painting
 Modernism
 Realism
 Romanticism
 The American Scene

Photography -- Dark room procedures
 Contact Printing
 Developing Roll Film
 Developing Sheet Film and Packs
 Projection Part I
 Projection Part II
 Spot Printing and Dodging

Museum of Modern Art

The Works of Calder Mobile 20 min.

National Film Board of Canada

Canadian Landscape 17 min.
Romance of Transportation (animation) 11 min.
West Wind 20 min.

Teaching Film Custodians, Inc.

America the Beautiful

The Jan Handy Organization

Workshop Series
Soldering

United States Department of Agriculture

Patterns of American Rural Art-
Navajo Weaving
El Navajo Santa Fe RR

University of Michigan

Paint as You Please

Young America Films

Jewelry and Silversmithing Series

Design in Jewelry
Enameling
Jewelry Finishing
Sand Casting and Holloware
Soldering Techniques
Tools and Techniques

Picture List

Albertinelli	The Visitation (Kent)	Italian, 16th cen.
Angelico, Fra	The Coronation of the Virgin (Craven) Angel Musician (Craven)	Italian, 15th cen.
Audubon, John J.	Snowy Heron (Craven) The Black Rat (Golden)	American, 19th cen.
Bellini, Giovanni	Portrait of the Doge Loredano (Kent)	Italian, 16th cen.
Bellows, George W.	Portrait of the Artist's Mother (Kent) Stag at Sharkey's (Craven) (Golden)	American, 20th cen.
Benton, Thomas Hart	Art of the West (Craven) Roasting Ears (Craven)	American, 20th cen.
Bingham, George Caleb	Fur Traders Descending the Missouri	American, 19th cen.
Blake, William	The Morning Stars (Craven)	English, 19th cen.
Botticelli, Sandro	The Birth of Venus (Kent) (Craven) Pallas and the Centaur (Golden)	Italian, 16th cen.
Boucher, Francois	La Pompadour (Kent) Young Lady With a Muff (Kent)	French, 18th cen.
Braque, Georges	Man With a Guitar (Craven) (Golden)	French, 20th cen.
Brown, Ford Madox	The Last of England (Kent)	Later British, 19th cen.
Brueghel, Pieter	The Wedding Dance (Craven) Hunters in the Snow (Craven)	Flemish, 16th cen.
Burchfield, Charles	Promenade (Golden)	American, 20th cen.
Burne-Jones, Sir Edward	King Cophetua and the Beggar Maid The Star of Bethlehem (Kent)	British, 19th cen.
Cellini, Giovanni	St. Francis in Ecstasy (Golden)	Italian, 15th cen.
Cezanne, Paul	Card Players (Riley) Still Life with Apples (Craven) Chestnut Trees at Jas de Bouffan (Kent) Landscape with Viaduct (Golden)	French, 20th cen.
Chardin, Jean Simeon	Le Benedictite (Kent) Blowing Bubbles (Golden)	French, 18th cen.

See ART FOR MISSOURI, A Curriculum Guide For Grades 7, 8, and 9 for sources of prints.

PICTURE LIST

Constable, John	The Hay Wain (Kent) The Cornfield (Kent)	English, 19th cen.
Copley, John Singleton	Daniel Crommelin Verplanck (Golden)	American, 18th cen.
Corot, Jean Baptiste	Gypsy Girl (Craven) View of Rome (Golden)	French, 19th cen.
Correggio, Antonio	Mystic Marriage of St. Catherine (Kent)	Italian, 16th cen.
Cox, David	The Skirt of the Forest (Kent) Harlech Castle (Kent)	English, 19th cen.
Crivelli, Carlo	Virgin and Child (Craven) (Golden)	Italian, 16th cen.
Dali, Salyadore	Persistence of Memory (Riley)	Spanish, 20th cen.
Daumier, Honore	The Legislative Paunch (Craven) The Uprising (Riley) The Washerwoman (Craven) Third Class Carriage (Golden)	French, 19th cen.
Degas, Edger	Rehearsal of the Ballet on the Stage (Golden)	French, 19th cen.
Delacroix, Eugene	Oriental Lion Hunt (Craven)	French, 19th cen.
del Sarto, Andrea	The Madonna of the Harpies (Kent)	Italian, 16th cen.
De Wint, Peter De	The Cornfield (Kent)	English, 19th cen.
Durer, Albrecht	Death and the Devil (Craven) The Adoration of the Kings (Kent) Self Portrait (Golden)	German, 16th cen.
Dyck, Sir Anthony Van	Portrait of Cornelius Van der Geest (Kent)	Dutch, 17th cen.
Eakins, Thomas	The Thinker Walt Whitman (Craven) The Gross Clinic (Golden)	American, 20th cen.
El Greco	Toledo in a Storm (Craven) St. Andrew and St. Francis (Craven) Adoration of the Shepards (Golden)	Spanish, 17th cen.

Eyck, Jan Van	The Virgin and Child and Donor (Kent) The Madonna of Chancellor Rolin (Golden)	Flemish, 15th cen.
Fragonard, Jean-Honore	The Swing (Kent) The Fair-Haired Boy (Kent)	French, 19th cen.
Gainsborough, Thomas	Portrait of Mrs. Siddons (Kent) The Blue Boy (Kent)	English, 18th cen.
Gogh, Vincent Van	Sun Flowers (Kent) Self Portrait (Kent) La Mousme (Riley) L'Arlesienne (Craven) Landscape at Arles (Golden).	Dutch, 19th cen.
Goya, Francisco	The Execution, May 3, 1808 (Golden)	Spanish, 19th cen.
Greuze, Jean Baptiste	Girl With a Cat (Kent)	French, 18th cen.
Hals, Frans	Hille Bobbe (Craven) The Jester (Golden)	Dutch, 17th cen.
Hobbema, Meindert	The Avenue (Kent)	Dutch, 18th cen.
Hogarth, William	The Shrimp Girl (Kent) The Graham Children (Golden)	English, 18th cen.
Holbein, Hans, the younger	Erasmus of Rotterdam (Craven) Christ in the Tomb (Golden)	German, 16th cen.
Holiday, Henry	Dante and Beatrice (Kent)	English, 20th cen.
Homer, Winslow	The Gulf Stream (Craven) The Fox Hunt (Kent) Hound and Hunter (Golden) Fog Warning Breezing Up Gas (Golden)	American, 20th cen.
Hopper, Edward		American, 20th cen.
Kandinsky, Wassily	The White Edge	Russian, 20th cen.
Klee, Paul	Child Consecrated to Suffering (Golden)	Swiss, 20th cen.
Landseer, Sir Edwin H.	Shoeing the Bay Mare (Kent)	English, 19th cen.
Le Brun, Charles	Madame Vigee Le Brun and Her Daughter (Kent)	French, 17th cen.
Lorrain, Claude	The Embarkation of the Queen of Sheba (Golden)	French, 17th cen.

PICTURE LIST

Mabuse, Jean	The Adoration of the Kings (Kent)	Flemish, 16th cen.
Maclise, Daniel	The Death of Nelson (Kent)	English, 19th cen.
Manet, Edouard	The Bar at the Folies-Bergeres (Kent)	French, 19th cen.
Mantegna, Andrea	Dead Christ (Craven)	Italian, 16th cen.
Marin, John	Maine Coast (Riley)	American, 20th cen.
Matisse, Henri	The Hinder Pose	French, 20th cen.
Memling, Hans	Portrait of Niccolo Spinelli (Kent)	Flemish, 15th cen.
Michelangelo, Buonarroti	The Madonna, Child, St. John and Angles (Kent) Self Portrait (Golden)	Italian, 16th cen.
Millais, John Everett	The Blind Girl (Kent) The Boyhood of Raleigh (Kent)	English, 19th cen.
Millet, Jean Francois	The Angelus (Kent)	French, 19th cen.
Modigliani, Amadeo	Gypsy Woman With Baby (Craven)	Italian, 20th cen.
Mondrian, Piet	Broadway Boogie Woogie	Dutch, 20th cen.
Monet, Claude	Terrace at Le Havre	French, 19th cen.
Murillo, Bartolome E.	The Immaculate Conception (Kent)	Spanish, 17th cen.
Nattier, Jean-Marc	Portrait of Madame Sophie (Kent)	French, 18th cen.
O'Keeffe, Georgia	Church at Ranchos de Taos (Gardner)	American, 20th cen.
Orchardson, William	Napolion on the Bellerophon (Kent)	Scottish, 20th cen.
Orozco, Jose	Man in Four Aspects (Gardner) The Barricade (Gardner) Zapatistas (Craven)	Mexican, 20th cen.
Perroneau, Jean B.	Girl With a Cat (Kent)	French, 18th cen.
Pettie, John	The Vigil (Kent)	Scottish, 19th cen.

Picasso, Pablo	Night Fishing at Antibes (Golden) Gourmet (Craven) Woman in White (Craven) Girl Before a Mirror (Craven)	Spanish, 20th cen.
Pollock, Nicholas	Number 12	American, 20th cen.
Poussin, Nicholas	The Gathering of the Ashes of Phocion	French, 17th cen.
Raphael, Sanzio	The Ansidei Modonna (Kent) The Marriage of the Virgin (Golden)	Italian, 16th cen.
Rembrandt, Van Rijn	Portrait of Himself (Craven) The Oath of the Batavious to Claudius Civilis (Golden) Man in the Golden Helmet	Dutch, 17th cen.
Renior, Auguste	La Loge (Kent) Luncheon of the Boating Party (Golden)	French, 20th cen.
Rivera, Diego	The Assembly Line (Craven)	Mexican, 20th cen.
Rossetti, Dante G.	Monna Pomona (Kent)	British, 19th cen.
Rouault, Georges	Christ Mocked by Soldiers (Craven) Pierrot (Riley) The Seated Clown (Golden)	French, 20th cen.
Rubens, Peter Paul	LeChapeau de Paille (Kent) Abduction of the Daughters of Leucippus (Craven) Head of a Child (Golden)	Flemish, 17th cen.
Ryder, Albert P.	The Racetrack (Kent) The Forest of Arden (Craven) (Golden)	American, 20th cen.
Sargent, John Singer	Carnation, Lily, Lily, Rose (Kent) Lord Ribblesdale (Kent)	American, 20th cen.
Seurat, Georges	Le Grande Jatte (Craven) (Golden)	French, 19th cen.
Steen, Jan Van	The Tooth Extractor (Craven)	Dutch, 17th cen.
Tintoretto	The Last Supper	Italian, 16th cen.
Titian, Tiziano	Bacchus and Ariadne (Kent) (Golden) Flora (Kent) Christ Crowned With Thorns	Italian, 16th cen.

PICTURE LIST

Toulouse-Lautrec, Henri	At the Moulin Rouge (Craven, Golden) Yvette Gilbert (Golden)	French, 19th cen.
Turner, Joseph M. W.	The Fighting Temeraire (Kent) (Golden) Crossing the Brook (Kent)	English, 19th cen.
Velasquez, Diego	Venus and Cupid (Kent) Portrait of Philip IV (Kent) Maids of Honor (Golden)	Spanish, 17th cen.
Vermeer, Jan	The Cook (Craven) The Artist in his Studio (Golden)	Flemish, 15th cen.
Watteau, Jean-Antoine	Fete Champetre (Kent)	French, 18th cen.
Watts, George F.	Hope (Kent)	English, 20th cen.
Weyden, Rogier van der	Portrait of a Lady (Craven) (Golden) Deposition	Flemish, 15th cen.
Whistler, James A.	The Little White Girl (Kent) Arrangement in Black and Gray Portrait of Thomas Carlyle (Kent) Battersea Bridge	American, 20th cen.
Wood, Grant	Fall Plowing (Kent) Midnight Ride of Paul Revere (Craven)	American, 20th cen.
Wright, Frank Lloyd	Falling Waterhouse (Craven)	American, 20th cen.
Yeames, William Frederick	When Did you Last See Your Father? (Kent)	English, 20th cen.

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